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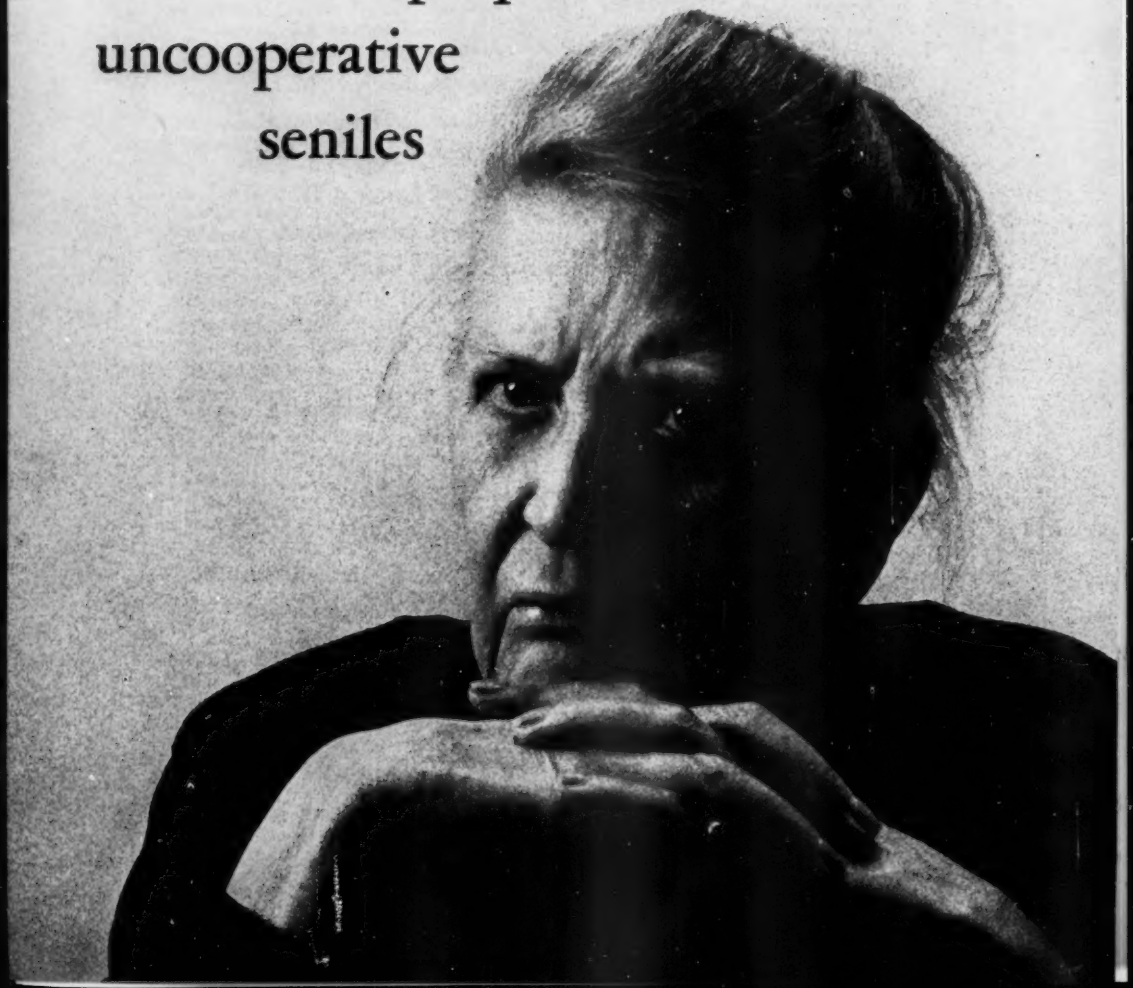

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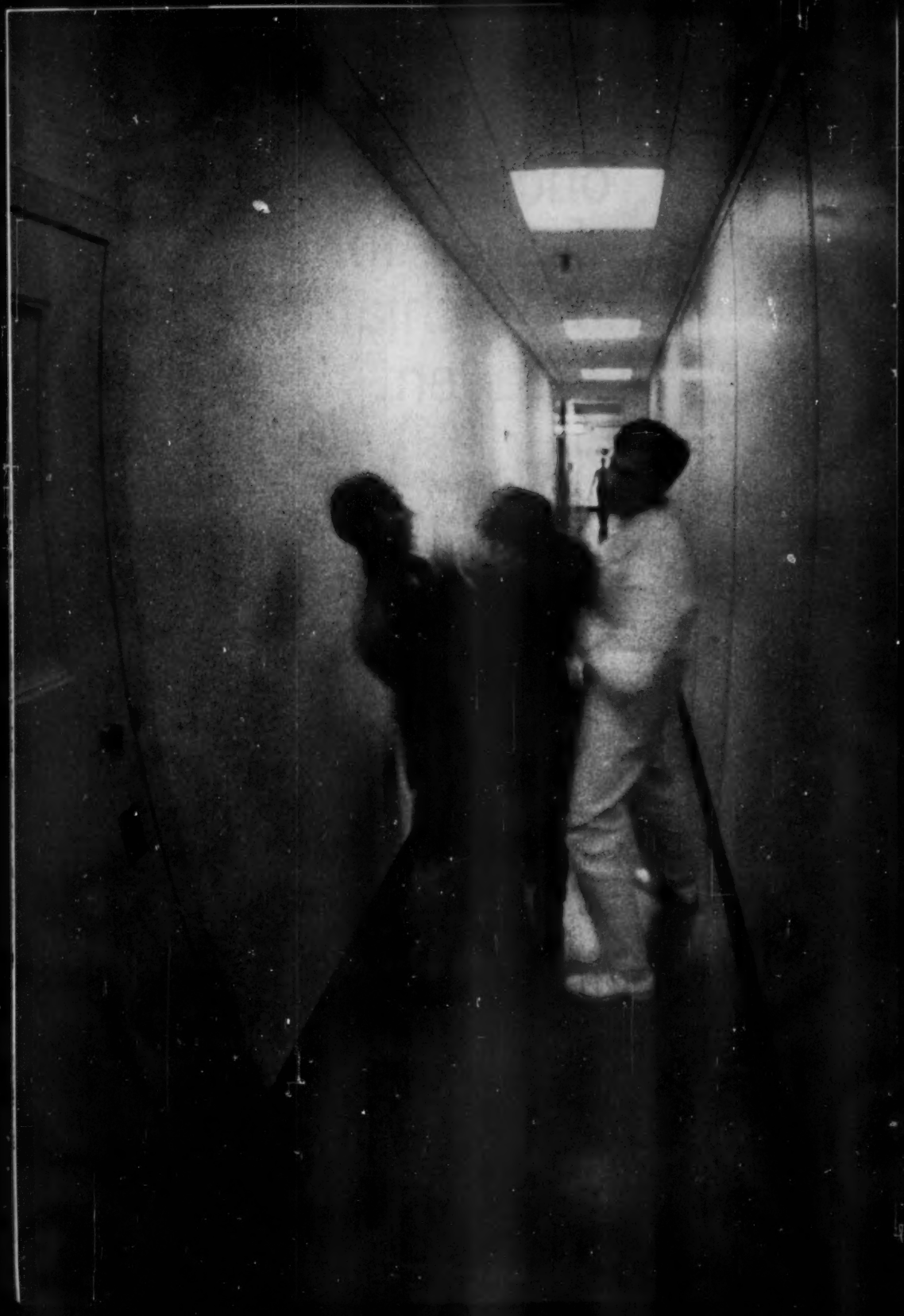

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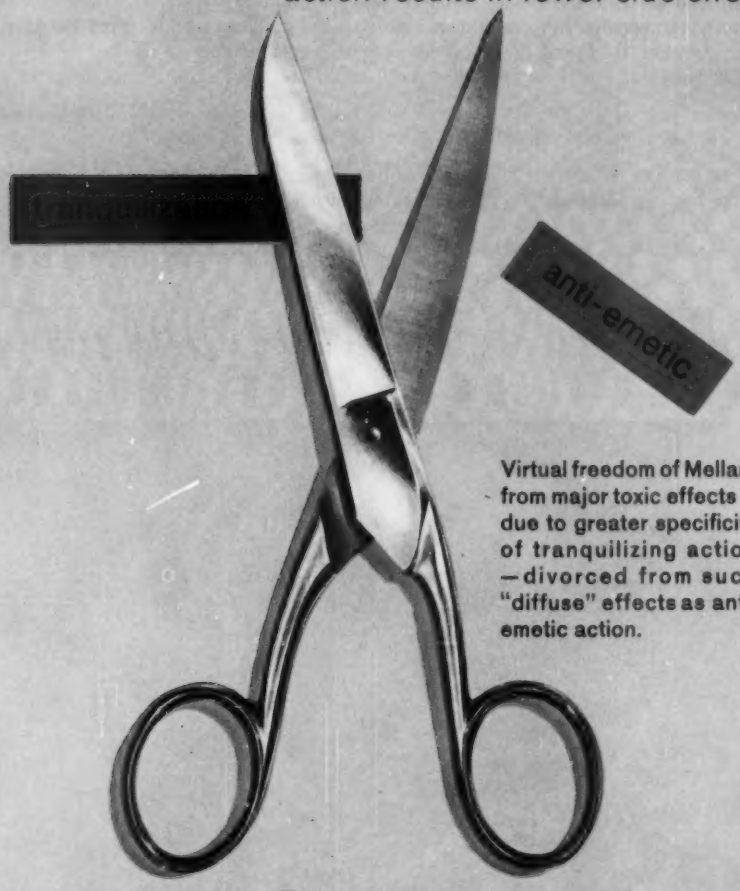

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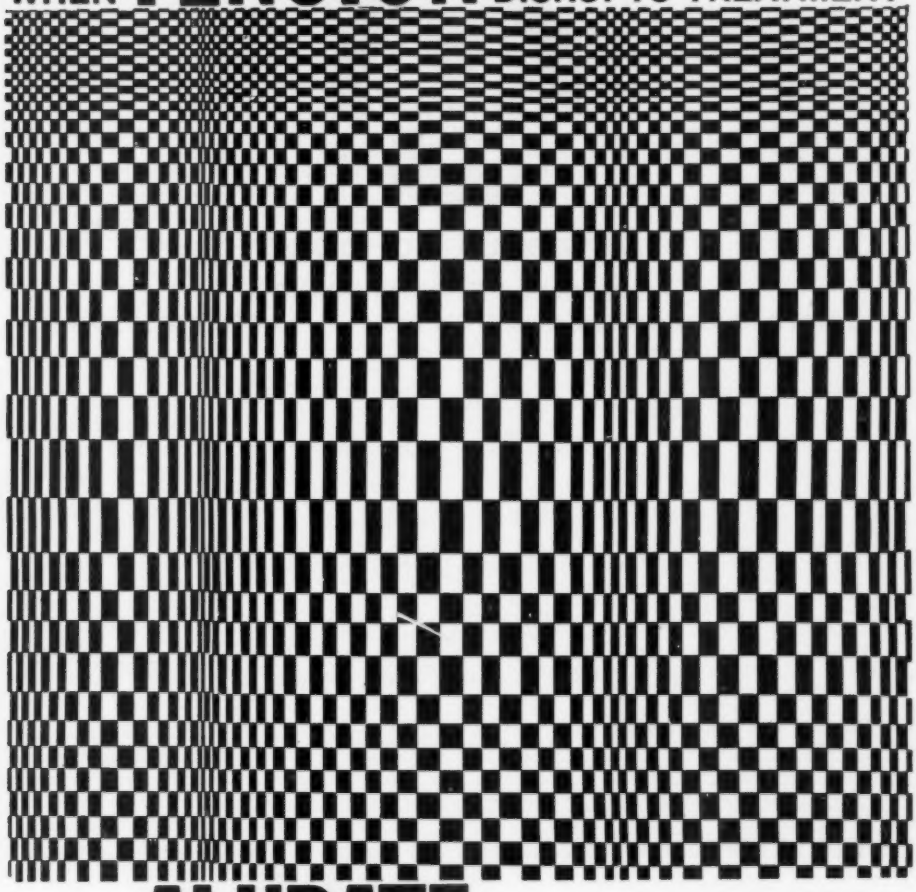

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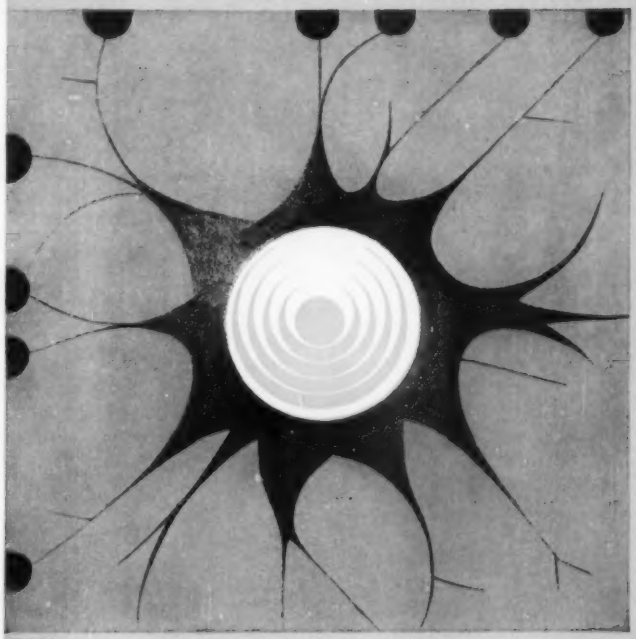

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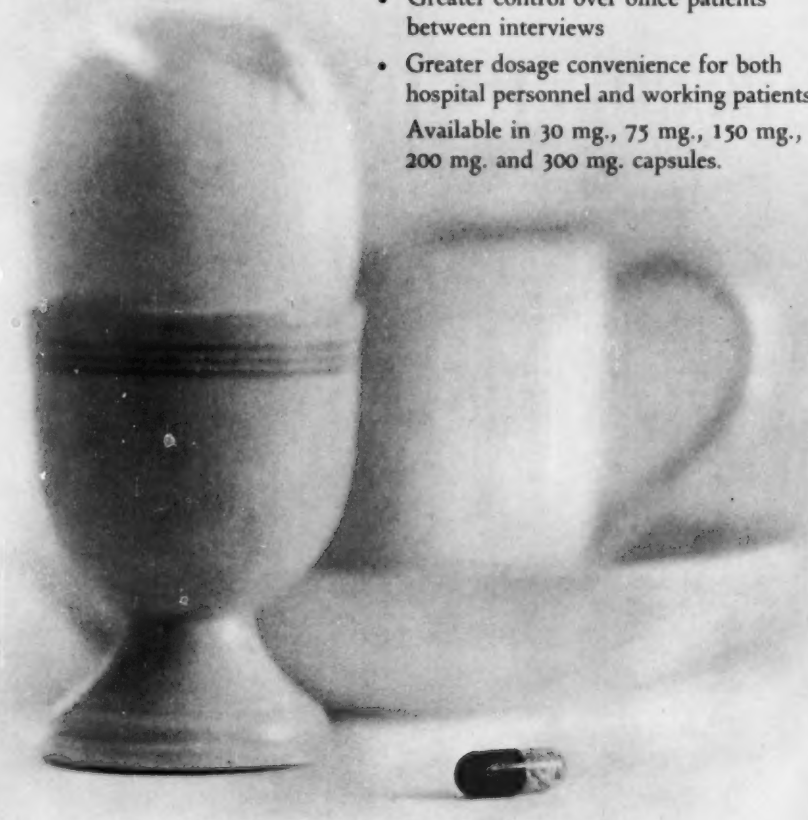

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A LONG-TERM INVESTIGATION OF CHLORPROMAZINE

A Study of Constant and Inconstant Chlorpromazine Administration Over a Period of Six Years With a Discussion of the Evolution of Our Theoretical Thinking [1]

N. WILLIAM WINKELMAN, Jr., M.D.[2]

Six years ago we cautiously gave chlorpromazine for the first time. Our results were reported in one year(1), in 3 years (2), and now we feel it is time for another appraisal—an appraisal based on the study of 1,090 patients, but more specifically of 75 patients who have been taking chlorpromazine since the investigation was initiated 6 years ago.

This paper is a concise summary of what has been learned and particularly how our thinking has evolved during this 6 year experience. Many of the details reported in 1956(2) will not be repeated. We divide our discussion into 3 areas: 1. Technique of treatment, 2. Results of treatment, and 3. Theory of treatment.

First, I will discuss the theory of treatment and then describe technique and results in terms of our present theoretical concepts. It has been our main thesis for the last 3 years that optimum results with the neuroleptic drugs can be achieved only by understanding the patient's personality structure. Accordingly, intelligent treatment must be individually determined, not only from the personality at the onset of treatment, but from an informed evaluation of the changes that are constantly taking place. We feel it is from an understanding of a patient's conflicts and the strength of opposing intra-psychic forces, and not merely his degree of motor agitation that, in the long run, will help the psychiatrist treat patients effectively. The need for understanding is further emphasized by the repeated observation that some psychic conflicts do rather poorly when treated with these drugs. Alteration of dosage is necessary, sometimes from day to day, according to the state of both intrapsychic conflicts and the environment. Optimum therapy can be accomplished only when the patient is seen regularly and the dosage adjusted according to the state of the conflicts.

Our present conception of the psychologic action of chlorpromazine, that is, the action on psychological functions secondary to the actions on certain brain centers, we explain by using the concept of psychic energetics. Every psychic act is invested with psychic energy which is freely mobile and shifts from one psychic element to another. When this energy charges or cathects an unconscious instinctual drive, the drive presses for immediate discharge in affects and in motility. This characterizes unconscious or primary process activity. The ego may or may not be able to accept cathected contents of the unconscious that are pressing for discharge, such as fantasies, drives, wishes, sensations and feelings. Thus, conflicts develop. Handling of the conflict can be either by complete repression and a decathexis of the instinctual drive or by acceptance of the drive by the ego as it becomes fully conscious. Each of these two methods of handling a conflict can be utilized and elaborated into a scientifically organized method of psychiatric treatment. Probing of the unconscious with acceptance of the drive, is accomplished by psychotherapy, and convulsive therapy is an example of suppressive therapy.

We feel that the phenothiazines can be utilized for either of these two basic methods of treatment. In the literature, for the most part, phenothiazine therapy means suppressive therapy and utilizes moderately

[1] Read at the 115th annual meeting of the American Psychiatric Association, Philadelphia, Pa., Apr. 27-May 1, 1959.

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large or large doses with a rapid buildup to the optimum therapeutic dosage, which in suppressive therapy is much higher than the dosage used in the uncovering techniques. In general, the more active or the more unopposed the primary process activity is, no matter what the diagnostic entity is, the higher must be the dosage. In these patients, a large dose of drug or a large increment in the dosage appears to markedly decrease the cathexis attached to the unconscious drive. Ego functions are, without doubt, also affected at this dosage, but comparatively far less than the knocking out of the abnormal primary process activity with the result that symptomatology is markedly altered. Whenever there is a reduction in dosage below a point that is constantly varying according to the status of the ego-id conflict, the inhibition of the cathexis ceases, and symptomatology bursts forth. Accordingly, expert management of these clinical problems requires understanding of the primary process, its content and its forces, in addition to understanding the status of the ego and its defenses.

If it is clinically desirable to treat a patient by a technique of probing the unconscious with acceptance of the drive and development of insight, there is an entirely different approach. Although the use of the phenothiazines in this clinical area is controversial, we have felt unequivocally during the last several years that these compounds have their place in treating the psychoneuroses and certain chronic psychoses entities in which the primary process is kept in control but a struggle is always present. The emphasis in this kind of treatment is not on the drug but on the active therapeutic process and the relationship between the physician and the patient. Here the problem of dosage, however, is more important, more sensitively determined and mild to moderate dosages are utilized. Theoretically, a chemical compound to be beneficial should facilitate the process of making unconscious material conscious. We feel that mild to moderate dosages of chlorpromazine produce an alteration of psychic energy and its distribution, which in turn affects many aspects of intra-psychic dynamics. There is alteration in the energy directed into the various psychic-structural components which can be studied by very careful observation. When the carefully determined optimum therapeutic dose is achieved, the following changes may occur which we repeatedly observed in studying patients for 3 hours per week over 3 years(3, 4, 5) with alternating drug and non-drug months. There is lessening of primary process drives. There is lessening of super ego strength. There is minimal diminution of ego functioning. There results from these changes a relative increase in ego strength. Defenses need be less strongly cathected. However, since the energy of the instinctual need is reduced, the defenses are relatively stronger. With unimpairment of the ego, there is improved reality testing. There also results an unusual emotion, indifference to painful internal and external stimuli. There appears to be a decrease in symbolizing ability with a lessening of displacement, so people are seen more realistically. Owing to this and the increase in ego strength, "acting out" is markedly reduced. Interpersonal relationships are much improved.

In the actual technique of treatment, initial dosage depends on whether a suppressive or uncovering technique of treatment is to be used. In the former, a large initial dosage is justified, and the dosage quickly increased until the optimum therapeutic dose is reached—the gradually determined amount of drug which produces the most effective clinical result beyond which increases will produce no further improvement and undesirable reactions may prove troublesome. Maintenance dosages also must be large enough to keep the id impulses under control, but it appears that once the ego has experienced a mastery of the situation, it can continue this new role with somewhat less pharmacologic help. Accordingly, after a few months of the optimum therapeutic doses, a somewhat similar maintenance may be used.

Since its exact effectiveness cannot be accurately predicted except by a careful study of the primary process—secondary process balance, chlorpromazine must be initiated on a 6-8 week trial basis in the neuroses and at least 3-4 month time in the psychoses. When the decision to use the

drug has been made, it must be used in an optimum manner. As is true with insulin in diabetes, and the anti-biotics in infection, an inadequate amount for the therapeutic problem at hand is essentially worthless. Chlorpromazine therapy ideally is far more sensitive and skilled a procedure than insulin is for the diabetic, anticonvulsives for the epileptic, or digitalis for the cardiac; for we are dealing with thousands of psychological variables. I cannot stress enough how carefully one must observe and try to understand his patient. For example, these drugs have some impairing effect on motility, a constructive effect in the hyperactive, and a destructive effect in the individual who uses activity as a defense against his passivity. In the patient with partial impotency or frigidity, these drugs may be very beneficial on one hand or exaggerate the condition markedly, depending on the underlying dynamics. Because of the indifference, the environment can be seen as less harsh and extremely pleasant. On the other hand, if the sources of oral-dependent gratification have been and are diminished, the environment can appear exceedingly unpleasant. Patients with an abnormal preoccupation with the body image may become less concerned, or much more concerned. Effectiveness of these drugs is also influenced by the state of the transference, and *vice-versa*. The constant intrapsychic changes should be handled with sensitivity and understanding. Dosages must be raised when there is increased stress from either internal conflicts or from the environment. We feel more and more strongly that the entire treatment philosophy should be oriented towards an understanding of the status of the ego and adjusting the dosage accordingly. In the acute psychotic patient, we first use large doses to subdue the pathological id drives. In so doing, we hope that the ego will eventually be strong enough to take more control. In the psychoneurotic and chronic psychotic patient, we treat while carefully waiting the status of the ego, always endeavoring to strengthening that structure. We feel that these drugs have great value in the psychoneurotic patient when administered with knowledge and above all, understanding.

In discussing our results we will use few figures, feeling that the percentage figures that are filling the literature, are essentially meaningless. Our 1956 paper(2) is filled with percentages about each psychoneurotic reaction, each psychotic reaction, in children, and in the aged. We now believe that evaluation of each patient's reactions in terms of primary process–secondary process conflict and the nature of the defenses is necessary to predict results and to treat with optimum effectiveness. An ego that is totally defeated can not be helped. The more the ego is struggling the better the prognosis. Certain defenses such as denial and the use of conversion offer a poor prognosis.

Once having been established, optimum therapeutic results can be maintained at a high level. The therapeutic results in the 75 patients who have taken chlorpromazine for 6 years were excellent; nearly all remained symptom-free during the entire period. We realize that these 75 patients make up a selected population. Those who responded well to the compound were willing to remain on a drug for such a long time. Furthermore, nearly everyone who takes a medication is bound to skip once in a while, and if a patient takes a drug for 6 years, there is a suggestion that reducing or withdrawing it will bring on a return of symptoms, and upon experimental withdrawal there will result an abnormal number of relapses. This was found to be true. Of 20 patients whose drug was stopped for 2 weeks, ¾ showed at least a partial return of symptoms within 5 to 12 days.

Chlorpromazine in the treatment of the acute psychotic patient (the patient whose ego has been overthrown by the forces of the primary process but one that is still fighting) is a remarkably effective treatment. It is about equally effective as ECT and more effective than insulin coma therapy, although the exact degree of effectiveness between these forms of treatment cannot be compared very easily because of the differences in patient material, techniques and other influences from study to study.

In the chronic psychotic and psychoneurotic, when the ego is strong enough to give long term battle to the opposing forces,

we feel that psychotherapy, as deeply oriented as the therapist is trained to effectively use, is the treatment of choice, although a knowledge of the psychological changes described above helps the psychotherapeutic process whether it is psychoanalytic or more supportive. Other extra-drug influences which help the struggling ego, such as a good job, good friends, family, a peaceful and loving home environment, interests, an accepting and supporting hospital environment, all give added therapeutic results. We do not recommend drug therapy alone except when the patient is inaccessible. In this clinical state, phenothiazines will subdue the overwhelming primary process; psychotherapy can begin; and in time, the ego can be strengthened.

No patient showed complications after 4-5 months of treatment except mild consistent weight gain (which reached a maximum and did not increase further). The blood counts and blood chemistry were normal throughout. Of the 1,090 patients treated, there were 7 cases of clinical liver involvement, all within the first 4½ months of treatment. Cessation of the drug treatment brings on a return of original symptomatology in three quarters of the patients. We felt that the more successful the psychotherapy or living experiences during the drug treatment the less likely was there to be a return of symptoms. The more generally successful the treatment of a psychiatric patient, the more likely will the patient remain asymptomatic when the dosage of drug ultimately is decreased or stopped completely. We observed unequivocally that the patients who received only drug treatment also had a quick return of symptomatology upon drug withdrawal, whereas those in well-oriented long term psychotherapy either did not have a return of symptoms or only a partial return. Furthermore, they could go longer without the drug before any symptoms developed. We feel that the amount of drug needed to maintain the patient free of symptoms is an excellent indication of the degree of recovery from the abnormal intra-psychic process.

It is concluded that long term chlorpromazine therapy is an extremely valuable and sensitive treatment, not only in the unapproachable psychotic as a suppressive therapy, but also in the approachable chronic psychotic and more approachable psychoneurotic, where it can be used as a constructive force furthering the psychotherapeutic process. Without psychotherapy, many good results are seen where successful living was combined with the drug(6). It is believed that in general the effectiveness of treatment is directly related to the orientation of the treating physician, how well he understands his patient, and how he applies this knowledge not only in the pharmacologic treatment but in the total treatment of his patients.

Summary

1. The paper is a concise summary of what has been learned and how our thinking has evolved during a 6 year experience with chlorpromazine. It also reports the results of 75 patients who have been on the drug for 6 years. The discussion is divided into 3 areas: 1. Technique of treatment, 2. Results of treatment, and 3. Theory of treatment.

2. Theory of treatment is discussed first. Our present concept of the psychologic actions of chlorpromazine we explain by using the concept of psychic energetics. We feel it is from our understanding of the patient's conflicts and an understanding of the struggle of opposing forces and not merely evaluating the degree of his motor agitations that, in the long run, will help us treat him effectively. It has, therefore, been our main thesis that optimum therapeutic results can be achieved only by understanding of the patient's personality and by understanding how a drug can influence this structure.

3. All psychiatric treatment is divided into two categories: 1. Helping the patient suppress and repress painful conflicts, and 2. Helping the patient recall and relive the memory and emotions of the conflict with feeling and understanding and more successfully. It is pointed out that chlorpromazine can be utilized in either of these basic techniques, and each is described separately.

4. It sumarizes how chlorpromazine affects intra-psychic activities and how, in turn, these can help the psychiatrist pre-

dict results and treat patients. The orientation of treatment, accordingly, must be the patient, not the chemical compound; the psychiatrist is concerned with psychology, not with chemistry.

5. The orientation of all treatment is an ego orientation, and optimum treatment is achieved by following the status of the ego and doing everything to strengthen that structure. The therapeutic attitude should be less of treating the illness and its symptoms and more of helping the recuperative powers of the patient cure himself.

6. It is suggested that optimum therapy is carried out by those who are well trained in understanding the patient's psycho-dynamic make up, who have experience in the use of the compounds, and apply this combined knowledge in treatment.

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THE FUNCTION OF PSYCHIATRY IN A MUNICIPAL LAW ENFORCEMENT AGENCY[1]

DAVID H. WILSON, M.D., LL.B.[2]

Psychiatric knowledge has found application in numerous areas of human relations in recent years. Psychological factors in the etiology of crime are well established as well as the necessity that rehabilitation programs be planned in accordance with our present knowledge of effective therapeutic principles. There has been a corresponding increase in the use of trained professional personnel, psychiatrists and those in related fields, in staffing agencies and institutions involved in the management of those individuals whose behavior indicates psychologic difficulties though falling short of overt mental illness.

Most progressive correctional systems regularly employ psychiatrists and related personnel, both in their prisons and, more recently, in their parole divisions. Some probation departments utilize consultants. Certain courts employ, and others have available, consultants in psychiatry, not only to advise in regard to criminal responsibility, but also to assist in recommendations as to proper disposition according to the psychologic problems involved.

Since medical emphasis quite properly has been prophylactically oriented when knowledge permits, it seems most curious that psychiatry has not been utilized more in the one area which might qualify as prophylactic rather than therapeutic in regard to crime, namely the local law enforcement agency. This is particularly curious in that it is this same agency which usually has first contact with adjustment problems due to mental illness as well. Yet in a current survey not yet completed, only a tiny percentage of some 90 cities large enough to support such a program employ or even avail themselves of consultation services of a psychiatrist.

Berkeley, California is a city of approximately 115,000 with a police force of 156 full-time employees, a staffing ratio of 1.37 law enforcement officers per 1000 population. This is considerably below the usual for a community of this size or larger, many having nearly twice this ratio with the average being somewhere around 2 per 1000. The department is affiliated closely with the University of California, several members instructing in the School of Criminology. These factors plus the following unusual administrative structure predisposed to the present psychiatric orientation. Each patrolman has practically complete autonomy on his beat, investigating and disposing of cases personally, unlike the more common situation in larger communities where he would turn many of these problems over to specialists who would be responsible ultimately for disposition.

Since 1915, members of the force have been instructed in basic psychology and psychiatry as related to their duties. Since 1921, new candidates have been screened by a psychiatric consultant. Beginning in 1949 and continuing to the present, the Department has employed a psychiatrist on a ¼ time basis (10 hours per week) and extended the duties to include the following general categories. Actually these duties are highly variable, the psychiatrist being available as a "trouble shooter" in any situation which might conceivably involve psychiatric factors, but a review of the records of my predecessor and my personal experience allows a grouping roughly as follows:

1. Administrative.—This involves primarily the screening of prospective candidates for positions of patrolman and patrolwoman. This is considered to be a portion of the medical examination rather than a relative rating device and as such a candidate can be eliminated if, in the discretion of the psychiatrist, he shows indications of psychiatric disorder sufficient to interfere with the performance of his duties. In addition, a candidate could be eliminated arbitrarily for mere possession of personality traits

[1] Read at the 115th annual meeting of The American Psychiatric Association, Philadelphia, Pa., Apr. 27-May 1, 1959.

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undesirable according to the personal standards of the psychiatrist. This latter responsibility is burdensome and probably statistically unwarranted according to a recent study which indicates that prognostication as to effectiveness of police candidates shows no better correlation with actual performance when done by psychologic or psychiatric evaluation than when done by experienced law enforcement officers. In borderline cases, however, a qualified approval will result in special observation during the candidate's probationary period.

Due to the close working relationship between the psychiatrist and the rest of the force, it is felt inadvisable to subject present members to a similar evaluation before promotional examinations. The psychiatrist is available for consultation in case of serious emotional problems involving present members, although this is an uncommon occurrence.

2. Liaison with other law enforcement and professional groups in the area.—Overlapping responsibilities among community agencies are distributed through contact with the group involved, *e.g.*, disposition of juvenile delinquents involving school, social work agency, police, district attorney, probation department, *etc.* Borderline cases involving medical problems are handled directly by the psychiatrist, *e.g.*, those involving physicians or psychiatric patients in therapy under local physicians.

3. Medical and psychiatric consultant to the department.—Included here are evaluation of disturbed prisoners in jail and consultation with detectives as to disposition of problem cases, particularly possibly psychotic defendants and sex offenders. Since written reports are prepared on all interviews, this information becomes available to other agencies, *e.g.*, the court and the district attorney's office, thus frequently avoiding the necessity for repeated examinations. Furthermore, the evaluation has the advantage of proximity to the offense, and is frequently much more accurate than those obtained later after the mental condition is modified by passage of time and possible secondary gain.

Cases are discussed with officers detailed to the juvenile bureau both as to disposition and follow-up if jurisdiction is maintained within the department. A good portion of the total time is spent with individual patrolmen working out proper procedure for managing disturbed citizens on their beat, either in conjunction with a personal interview with the citizen or on the basis of the officer's observations.

4. Direct contact, including intermittent supportive psychctherapy of problem cases, adult and juvenile within the jurisdiction of the department.—Appointments are arranged at headquarters usually but an occasional visit at home is necessary. Some of these cases have been maintained in this way without the necessity for commitment or referral to the juvenile courts. In other cases, one interview is sufficient to obtain enough evidence to justify commitment of borderline psychotic individuals who would otherwise be left without supervision in the community.

The third and fourth general groups comprise the bulk of the time allotted. In addition to the general categories, there is periodic participation in the training program for new recruits and in-service training for older members. This involves a practically oriented course in the recognition and management of psychiatric emergencies and of the commoner potentially committable mental illnesses. Some thought has been given to a more extensive course in human relations but practical time considerations pose a serious problem in planning such a program.

With the present emphasis on local community care of emotional problems, it is essential that the patient involved be exposed to psychiatric evaluation early in the course of his disorder. Probably the majority of disturbed juveniles and a good portion of disturbed adults are brought to the attention of the law enforcement agency long before the psychiatric problem is severe enough to indicate a purely medical disposition, and frequently long before the psychiatric problem is immediately apparent. In the absence of available psychiatric services, the only choice is to ignore the problem, to dispose of it through criminal channels, or at best, to refer it to a state medical facility which usually involves removal from the community.

It seems quite reasonable that early

recognition of these problems should be accomplished at the law enforcement level by professionally trained personnel. Although an available consultant might suffice as to the strictly diagnostic features, this arrangement is not entirely satisfactory in other regards. Aside from the convenience of regular duty hours, there is the subtle advantage in working relationships when the psychiatrist is a member of the "team" and overtly interested in proper law enforcement rather than outside impartial observer unaware of the special police problems involved. There is also the problem of the characteristic reluctance of department members to make special arrangements for psychiatric consultation. A salaried arrangement, however, sometimes results in consultation requests more or less in desperation in difficult cases even where the referring officer has little hope that the examination will uncover anything. Needless to say, the latter extreme is the more desirable of the two.

Based on relative population figures, there are at least 90 American cities which might similarly utilize at least part-time psychiatric services. In addition, smaller communities might well arrange for consultation as needed. Populous unincorporated areas could arrange the same through the local sheriff's office. Some 20 communities might well afford full-time services and a few of the larger cities perhaps even more than one professional member, particularly where there is a full-time police academy.

The results of the present inquiry indicate that few communities have ever considered this possible use of psychiatry. As a result of the experience in Berkeley, serious consideration should be given to the institution of similar programs elsewhere. Very probably the initiation of such a program will have to come from some source other than the department itself, not because of resistance but rather simply lack of exposure to the possible advantages. Appropriate committees in local psychiatric and mental health societies might well be the proper instigating bodies. A combination program with the local health department or perhaps local mental hygiene clinic is another possibility.

In any event, a comprehensive community program of preventive psychiatry should not overlook a natural case finding and early treatment source. At the present time, there is probably no better source than the municipal law enforcement agency.

PSYCHIATROGENIC ILLNESS

A. H. CHAPMAN, M.D. [1]

At the present time when psychiatric treatment is becoming more common, a psychiatrist from time to time sees patients whose problems, in retrospect, have been more complicated than ameliorated by psychiatric attention. This is not to deprecate either the widespread need for treatment of emotional problems or the advances made in psychiatry in recent years, but merely to point out that such advances have their hazards as well as their advantages.

In the same manner that the term iatrogenic refers to illnesses and syndromes precipitated or caused by medical attention, the term psychiatrogenic may be used to refer to difficulties precipitated or caused by psychiatric intervention. Very little attention has been paid in the medical literature to this problem. Psychiatrists in recent years have been eager to stress to their medical colleagues the importance of a psychiatric understanding of many medical problems; the occurrence of psychiatrogenic difficulties has received scant notice.

The existence of psychiatrogenic illness is readily admitted by many psychiatrists (1, 2, 3, 4) though it is not possible to estimate its frequency. Certainly it must occur in only a small number of persons who are brought to psychiatric attention, but it is frequent enough to merit some attention as a disturbing complication of the current expansion of psychiatric treatment.

Any discussion of psychiatrogenic problems must take into consideration that psychiatric illness is a much more fluid concept than physical illness. Emotional problems are, to a certain extent, universal since all human existence is a continuing process of adjustment to an interpersonal environment which is constantly changing. Normal people are those persons who are making these continual adjustments with a minimum of conflict and relatively few psychogenic symptoms. Psychiatrogenic illness is often merely an exacerbation of previous personality problems which, however, would not have become incapacitating or significantly more distressing had psychiatric intervention not occurred.

It is well known that psychoses may be precipitated by psychiatric treatment(1, 2). It seems probable that such psychiatrogenic psychoses occur mainly in persons who originally had profound underlying emotional problems which were not previously apparent in their overt social functioning. The crucial question is whether or not the individual so afflicted would have lived out his life without a psychotic illness if the psychiatric attention had been withheld.

Much importance should be paid to the question of which patients should *not* be treated psychiatrically. It is felt that an important prerequisite to the eventual answering of this question is the clear definition of psychiatrogenic illness as a medical problem. Delineation of a problem is often made easier if a concise term is available to describe it, and for that purpose the term psychiatrogenic has been introduced here.

A telling commentary on this problem is found in the autobiography of the distinguished orchestra conductor, Bruno Walter, who in 1906 consulted Sigmund Freud regarding a hysterical paresis of his right hand(5). The problem was serious, for it incapacitated Walter professionally. He consulted Freud expecting that psychoanalysis would be the necessary treatment. Freud examined the afflicted hand carefully and interviewed Walter. To Bruno Walter's surprise Freud recommended that he take an immediate vacation and suggested Sicily. Walter followed the advice and in time his problem spontaneously cleared; he remained free of any further such symptoms for the rest of his life. We do not know how Freud reasoned in the matter, but it is possible that he felt extensive psychotherapy in this patient would be more prone to prolong the symptom than to cure it. Freud, the originator of systematic interview treatment,

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was aware of its limitations and hazards (6).

Various aspects of psychiatrogenic illness may be considered under the following categories of psychiatric treatment: (a) Interview treatment (psychotherapy), (b) electroshock treatment, (c) psychiatric hospital inpatient procedures and diagnostic techniques.

INTERVIEW TREATMENT

It is well recognized that interview treatment may precipitate psychotic episodes by disturbing the precarious emotional equilibrium of anxious, shy, schizoid persons. The fragile emotional defenses which allow many such persons to continue social and economic adjustment may be so badly disturbed by the exploration of childhood experiences or current interpersonal stresses that schizophrenic psychoses may be precipitated. Depressive psychotic episodes may also originate in this manner when painful past experiences or guilt-ridden interpersonal relationships are too abruptly explored in passive, insecure, dependent individuals. There have been no psychiatric studies, to my knowledge, dealing with the course and prognosis of such psychiatrogenic psychoses, but I have had the opportunity to study two patients in whom continuing psychoses of several years duration had been so precipitated. It seems clear that some such patients would not have become psychotic if psychiatric intervention had not occurred (2, 4), and they in all probability would have continued to adjust at their previous level of social and economic functioning for an indefinite time. A decision as to whether or not such a person should be treated psychiatrically should take into consideration his current level of functioning, his responsibilities, and his position in the family structure, and should weigh carefully the potential risks of such treatment against possible gains.

In many persons it is unwise to disturb existing psychoneurotic problems (1, 4). A mildly obsessive compulsive person, when deprived of the regimented harness of his rituals and systems, may develop severe anxiety attacks or depressive symptoms. The removal of a minor hysterical symptom may at times be followed by the development of other hysterical symptoms which may be more distressing than the original difficulty. A severe personality problem or even a psychotic episode may be precipitated by the removal of a long standing psychosomatic symptom which had served an important function in the emotional economy of a patient (7, 8).

Attention must be paid at times to the possible unfortunate effects that psychotherapy may have upon interpersonal relationships in the patient's life. It is well known that personality change occurring in one member of a marital team during psychotherapy may make continuation of the marriage impossible. A woman with a need to control and dominate others may find it impossible to continue a marriage with a husband who has lost his passivity and has become assertive of his aggressive feelings as the result of psychotherapy. The effect of such possible changes upon children and other involved persons must often be weighed before psychotherapy is undertaken. It is commonly said that such problems can be worked out if the marital partner will also undertake psychiatric treatment to correct his or her personality problems; in practice, however, such treatment is often not accepted, or may be economically or technically infeasible. Other disruptions of family structures, or of vocational and social relationships, may also be precipitated by psychotherapy.

Another psychiatrogenic area is that of unresolved transference neuroses. Transference neurosis, involving a disturbed set of attitudes and feelings which the patient develops toward the psychiatrist, is a frequent aspect of some types of intensive psychotherapy. Most psychiatric literature blandly assumes that all such transference neuroses are eventually resolved in treatment, thus freeing the patient of previously unsolved emotional problems which were reënacted in the transference situation with the psychiatrist. In general this seems so, but most psychiatrists with long experience have had occasions to observe and study persons in whom transference neuroses had not been resolved at the time treatment ended, even though treatment lasted several years. Such persons may have persistent emotional and personality problems as

the result of the unresolved transference neurosis. The transference neurosis may have remained unresolved either by virtue of the severity of the patient's problems or the therapeutic limitations of the therapist. Too little attention has been paid in the psychiatric literature to the problem of unresolved transference neuroses. It is not sufficient to say that if the patient had persisted longer with treatment he might eventually have worked through his transference neurosis. It must be admitted that the limitations of psychotherapy, as we have it today, often allow the patient to depart from treatment with these problems yet unresolved. It is also clear that because of this type of problem there are patients whose difficulties have been made worse rather than better by the treatment process. This is not to be interpreted as a rejection of the usefulness of transference phenomena in treatment, but rather as a recognition that transference analysis has its psychiatrogenic hazards as well as its useful potentialities. It should be pointed out also that transfer *psychoses* occur(9), and from time to time may become long-term, crippling psychiatrogenic complications of interview treatment; however, they are much less common than transference neuroses.

These considerations emphasize that psychotherapy is not lightly to be undertaken on the premise that it can do no harm and may do some good. Rather, the possible psychiatrogenic complications of interview treatment emphasize that it is a procedure carefully to be weighed in terms not only of possible advantages to the patient but also of the hazards that may be encountered.

ELECTROSHOCK TREATMENT

The physical hazards of electroshock treatment have been considerably reduced in recent years by refinements of technique and the introduction of various relaxing and anesthetic agents. It has been rendered relatively safe and easily administered. Such developments have encouraged widespread use of ECT for a variety of psychiatric problems.

It has been well demonstrated that psychotic episodes may be precipitated by electroshock therapy(10, 11, 12) and that such psychotic episodes are not always reversible. In schizoid persons who were not overtly suffering from schizophrenic psychoses ECT may precipitate severe psychotic episodes. If such persons are given electroshock therapy for mild or moderate depressive symptoms the treatment may precipitate a psychotic episode much more serious and crippling than the original depressive difficulty.

There is much evidence to indicate that ECT partially impairs the integrative functions of the ego, or at least diminishes the ego's finer capabilities, for a brief period (13). Some patients cannot tolerate such a disturbance of ego structure without the risk of serious emotional disintegration. The decision to give electroshock treatment should be carefully evaluated to avoid the occasional precipitation of such psychiatrogenic illnesses.

PSYCHIATRIC HOSPITAL PROCEDURES AND DIAGNOSTIC TECHNIQUES

There is a widespread movement at the present time to establish psychiatric wards in general hospitals. Several hundred general hospitals in the United States, both private and governmental, now have such psychiatric units as a part of their general medical facilities; many more hospitals are contemplating the construction of similar units. These units are designed for relatively short term hospital care, and their location in general hospitals considerably removes the previous popular stigma of psychiatric inpatient treatment.

This movement is much to be commended, but introduces certain psychiatrogenic hazards. As a result of these easily available facilities, a larger group of persons is going to experience brief periods of psychiatric hospitalization. One risk, with which I have had recent experience, is that psychiatric hospitalization may become an attractive escape for dependent, frightened people who find the stresses and perplexities of daily life painful and difficult. Some of these persons could continue to make a social adjustment outside a hospital, but if psychiatrically hospitalized they may find this protective environment emotionally gratifying to such an extent

that they undergo repeated hospitalizations in psychiatric pavilions of general hospitals. Eventually some are institutionalized for longer periods in the economically more feasible setting of state hospitals. Such an undesirable psychiatrogenic deterioration of the patient's condition is particularly likely to occur in severe phobic, dependent, or anxious persons, often with mild to moderate depressive overlays. Such persons are at times hospitalized upon the premise that such a procedure may possibly help them and cannot do harm. They may, however, develop psychiatrogenic exacerbations of their personality problems to such an extent that they become chronic psychiatric invalids either at home or in institutions. Such people could probably have continued to function socially and economically, though limited by their problems, had psychiatric hospitalization not been carried out.

Caution must be taken in selecting patients for such procedures as barbiturate interviews and hypnosis. Following the Second World War, there was much interest in the use of interviews carried out on patients partially narcotized with intravenous pentothal or amytal, for diagnostic and therapeutic purposes. Increased experience with these agents has indicated that psychotic illnesses may be precipitated by the ego-weakening properties of barbiturate interviews(14). Such potential hazards in hypnosis have similarly been known for a long time(15).

DISCUSSION

Each new field of medical therapy can profitably review the ancient medical axiom, "Primum non nocere," "First of all, do no harm." This injunction may be made to therapists in the field of interview treatment, which is largely a product of the twentieth century; as a widespread treatment method it is an innovation of the past 40 years. To ignore such warnings will at times lead to psychiatrogenic damage to patients. The development of psychotherapy is a significant forward step in medical progress, but there is urgent need for emphasis of its limitations and hazards as well as its potentialities.

We live in a time when pessimism is unfashionable among psychiatrists and unblemished optimism is viewed by many in the field as virtuous and enlightened. Such a point of view is common during the first flush of development and success in any new field, but mature consideration inevitably leads to a more cautious appraisal of the risks and limitations of the new therapeutic method. Consideration of the occasional psychiatrogenic hazards of psychiatric treatment will underline the need for critical re-evaluation of the methods, goals, and results of recent psychiatric progress.

A final word should be said about some of the unfortunate effects of the widespread publicity which is being given to psychiatry in the public press. Much of this publicity is viewed with apprehension and disapproval by psychiatrists, but it must be admitted that psychiatrists themselves have contributed to the dissemination of such data in their earnest desire to acquaint the public with progress in their field. The public is becoming increasingly aware that psychiatric illness is often considered to be caused by disturbed interpersonal relationships, sometimes dating back to childhood relationships with parents. This sometimes results in much painful guilt and distress in the parents of adult psychiatric patients. The parents and other relatives of such patients may become quite upset, even at times psychiatrically ill, in dealing with the feeling that they themselves may be responsible to a large extent for the illness and suffering of the patients. One has but to interview the parents of homosexual men to appreciate the self-questioning, agony and distress that such parents undergo for years after the discovery of the sexual difficulties of their sons. Regardless of the validity of such concepts on the etiology of psychiatric illness, and regardless of the possible general mental health advantages of the dissemination of such information, it must be recognized that the widespread acquaintance of the public with such concepts leads to suffering as well as benefit.

Much more restraint and judgment should be exercised in the exposure of the public to psychiatric concepts. The emotional disturbances and unhappiness caused

in the relatives of patients by widespread dissemination of psychiatric concepts may to a certain extent be considered a psychiatrogenic complication of public education in psychiatry. Public mental hygiene education is desirable and necessary, but should be carried out with discretion, tact, and literary good judgment.

SUMMARY

The term psychiatrogenic may be used in referring to problems and symptoms precipitated by psychiatric attention or treatment. Such difficulties may occur as the result of interview treatment, electroshock treatment or exposure of patients to psychiatric hospital procedure and diagnostic techniques. The current widespread increase of psychiatric treatment is to be commended, but the psychiatrogenic hazards that accompany it should be recognized.

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SENSORY DEPRIVATION AND PERSONALITY [1, 2]

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In the 5 years since the pioneering work of Hebb and his associates(1, 2) there has been a growing number of studies of human isolation(3, 10). Despite the relatively mild restrictions imposed, there can be no doubt that marked changes in human functioning occur, and that these changes are noted under a variety of experimental and natural conditions. It would now seem the task of the investigator to study the significance of 3 sets of variables.

1. Experimental variables established by the structure of the situation; *e.g.*, types of sensation limitation used and whether these limit the total amount of sensation or merely de-pattern it.

2. Subject variables which are independent of the experiment such as the subject's personality, motivation, educational level, *etc.*

3. Variables due to the interaction between the experimenter and the subject such as the "psychological set" of the subject which may be determined by the instructions and attitude of the experimenter.

We will report on the relationship between ego-integrity and findings obtained after an 8-hour period of sensory deprivation produced by masking goggles (blackout or translucent), a masking noise to occlude ambient auditory stimuli, and arm restraints (mailing tubes and gloves). Our subjects were paid at the rate of $1.25 per hour. They lay on a bed in a small room wearing comfortable street cloths. They were toileted as needed, but otherwise the experimenters did not enter the room or communicate with the subjects. Plantar and chest electrodes were attached to record GSR and EKG. Before coming for their first interview, they had received a form briefly describing the experiment so that to some extent they all had the same information about it. Just prior to the start of the isolation session, subjects were directed:

> . . . tell us, from time to time, about your mental processes, thoughts, images, day dreams, perceptions, feelings—just what it is like to be in this experiment. It is not expected that you will talk continuously."

The results here described are from 43 [5] subjects recruited through the student employment service of 2 local colleges. Subjects who had participated in other similar psychological experiments or who were students in this field were eliminated. They were primarily middle class males who had had other jobs from the employment service and expressed a need for money. They were run at a time when our experimental and interviewing techniques had been stabilized. Evaluations and diagnoses were based on an interview before the experiment, and a short autobiography. This initial interview was a structured exploration of the subject's motivations and expectations, his habitual forms of imagery, past history, present situation, family and other relationships, the stressful events of his life, and self-concept. Within each area the interview was conducted as an associative anamnesis. The interviewing and the analyses of the interviews were done by a psychiatrist in his fifth year of training. Immediately after the interview the subject was rated for overall ego-integrity based on (a) overt anxiety, (b) maturity of defenses, (c) health of object relations, and (d) current level of functioning in work. At this point a number of subjects were separated from the main experimental group on the basis of personality deviations. These are the 7 subjects re-

[1] Read at the 115th annual meeting of the American Psychiatric Association, Philadelphia, Pa., Apr. 27-May 1, 1959.

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[5] Ten of these were control subjects in social isolation alone who reported none of the effects described below.

ported on in detail below. After the experiment another interview with each subject was conducted by the psychologist. This interview elicited reports of subjects' actual thoughts, feelings and experiences during the experiment, often providing supplementary and corroborative data to the initial interview.

At a later date, the typescripts of the 2 tape-recorded interviews and the autobiographies were reviewed and rated independently of the post-interview impression. These 2 sets of ratings rarely differed significantly and this difference did not affect the data.

We shall report on the relationship of ego-integrity of 3 types of experimental data.

1. *Perceptual test data*—Most experimental subjects report striking perceptual aberrations after the experiment: straight lines appear to move, triangles seem to change shape, halos develop and figures become larger or smaller. As far as can be ascertained the results of perceptual tests did not seem to be related to the ego-integrity of the subject.

2. *Imagery reported by the subject or elicited by interview*—We have been most interested in the striking sensory deprivation imagery which appears spontaneously and which resembles hypnagogic imagery, probably due to the fact that sensory deprivation promotes a transitional state between sleep and wakefulness(3). To the subject, it seems autonomous and appears to be foreign to his thoughts and experiences. It is often quite colorful and striking in detail, having short duration with successive images seemingly unrelated. Our techniques did not permit us to understand the meaning of the imagery and its relationship to the subject's personality. However, it does not appear to be correlated either in extent or intensity with ego integration. This lack of relationship must be viewed in terms of the fact that these subjects were for the most part selected so as to be a fairly homogeneous population and only a few of them could be considered as less than average in general adjustment. In these few less integrated subjects, imagery has also been present, and it is our impression that they had a greater tendency to interact with their imagery and to be more emotionally involved with it than the healthier subjects, which may reflect a lessened ability to reality test in a situation which interferes with this ego function, impairing the autonomy of the ego from the id(11).

Imagery occurs significantly more often in those subjects who habitually have hypnogogic imagery. This observation is statistically significant. It probably is also correlated with frequent dreaming when visual elements of the dream predominate. We have suspected that imagery may be more prevalent in subjects interested in the visual arts and have preliminary data confirming this hypothesis. Distortions in other sense modalities than the visual occurred, and changes in body image, kinaesthetic and auditory misperceptions were noted, but not sufficiently often so that they could be correlated with ego-integrity.

3. *Total reponses of the subject as observed, reported by the subject and determined by post-experimental interview*—Healthy subjects have been able to tolerate the sensory deprivation situation for 8 hours. Only 3 subjects had to terminate early, an observation which will be discussed later. In general, healthy subjects reported that they felt relatively comfortable. This we believe is due to their ability to use a variety of regressive and defensive techniques such as sleeping, engaging in time-passing maneuvers such as doing problems, exploring their environment and sometimes freely fantasying. Often they were willing to return, but if run a second time reported more boredom. This we feel is because the need to prove oneself is not present in a re-run.

In our subjects several sub-groups manifested special responses. First, there were 3 subjects with schizoid personalities whose reactions were characterized by withdrawal, isolation, repression and intellectualization. They were usually passive persons lacking in warm human relationships, who lived lonely and solitary lives. These subjects were unusual because of their lack of involvement in the experiment. Although they cooperated passively, they experienced little or no imagery and generally found the

experience pleasant and undisturbing. As one of them said :

I feel that I'm much more suited to taking this kind of thing than the average person. I think other people are less used to these kinds of conditions ; therefore they might be more thrown by them and might react more abnormally. This is much more like my normal life . . . being alone, not moving much.

There is always a real possibility that these or other subjects are repressing or denying feelings and imagery or that they simply refuse to reveal it. Unfortunately, all that can be done is to be aware of this possibility since regardless of how intensive the study some areas of personality will perforce remain unexplored.

Two subjects were diagnosed as borderline states. Both relied on narcissistic defenses such as projection, distortion and denial. One subject (A) had serious confusions about his sexual identity, much overt anxiety and a need to act-out. The other, (B), was more vague, confused and withdrawn.

Subject A was motivated by "curiosity about . . . rats, mazes and hypnosis." He came from a very disturbed family : his father subject to violent rages and his mother often unable to control herself. Home, he said was "horrible." He said, "I enjoy not only heterosexual but also homosexual relationships." During the interview he was preoccupied by what the interviewer would think and what his facial expressions "meant." We predicted that he would not tolerate the experiment and during it he spoke of having sensations in his left foot which "are intolerable, driving me crazy, practically unbearable . . . which I cannot take." He terminated after one hour. Afterwards he said that he did not think the investigators were "sadists or anything . . . out to kill me or anything" and compared the experiment to "1984, with cages of rats and the Chinese tickling situation where they drive you insane."

In summary, he was diagnosed as a borderline state and developed intolerably frightening fantasies in an unstructured situation.

Subject B, when asked why he was doing the experiment, was only able to say, "It was posted." He expected that, "It sounds great . . . and is a question of patience . . . I will try to leave the experiment behind and go off somewheres in my head." He was similarly vague about his life, reporting that his marriage had just seemed to happen. Unlike Subject A who was more paranoid, he tended to be more vague and confused, although functioning somewhat better academically. He tolerated the 8-hour sensory deprivation, reporting that, "I saw pictures like my dreams, which are catastrophic." His imagery was of, ". . . men and women walking in the rain," or "lots of colors I'd never seen before" which were described as pleasant. But unlike most subjects he had frightening imagery such as "crates 14 miles high . . . someone clinging to them ; they all tumble down and I wanted to get out of the way." He also reported "powerful odors," "clicking signals" and "tingles in my leg . . . maybe current." He was wary of the investigators, wondering if he would "get electric shocks," feeling "sort of hypnosis," worrying about "being driven mad," and wondering if "I was running the machine or they would control me." He handled these fears by "letting time pass" and "not living in my head . . . feeling disconnected."

In summary, he was diagnosed a borderline state, more passive and withdrawn than Subject A and somewhat better functioning. Due to his ability to withdraw and lesser need to act-out, he was able to tolerate the experiment despite frightening fantasies.

In the last sub-group were 2 subjects who had strong psychopathic tendencies. They were facile, glib persons, able to talk their way through life, who were superficially successful but who had impaired object relations, viewing people as objects to be manipulated and used. These 2 subjects did not terminate the experiment themselves, but rather, forced its termination by their behavior, such as removing the goggles, earphones, *etc.* They justified this on the basis of minor discomforts, saying that, "they did not know it was really important." It is clear that they behaved in sensory deprivation as they did habitually.

Motivation and expectation were often difficult to elicit. Subjects usually reported need for money and some curiosity. It was only in the less healthy subjects that bizarre motivations and expectations could be elicited. We were impressed that the need to prove oneself or learn about oneself was rarely mentioned ; and are inclined

to believe that the "common sense" motivations and expectations of most of our subjects reflect the strength of their defenses and that revealing the need to prove oneself and other more bizarre feelings are a sign of impaired ego-integrity. Save for this general correlation, no specific relation of motivations and expectations with experimental findings was found.

DISCUSSION

Perhaps sensory deprivation can be viewed most usefully as an ambiguous situation which may be structured in various ways, depending on the subject's perceptions, and then defended against accordingly. We would emphasize that our subjects, except for being told to report their experiences occasionally and told how long they would be in, were told nothing of what we expected or wanted, although the initial interview with its emphasis on imagery may produce a special "set." Cohen and Silverman(4) have noted that even briefer exposures to sensory deprivation with even less preparation are quite disturbing. Not only is there a lack of patterning of incoming visual, auditory and touch-proprioception stimuli, but there is also a lack of patterning as to expectations. The subject does not know what will happen nor what to do about it.

The subject's only external sensations are relatively monotonous and unpatterned. He may have to defend himself against them and shut them out. He is also handicapped in effective reality testing of his internal sensations in a situation where certain defenses such as acting-out are limited. It would seem likely that subjects using certain patterns of adaptation and defense will find sensory deprivation more tolerable than others who favor those techniques which are most curtailed.

We are impressed that how a subject does handle this unstructured situation is quite consonant with his personality and in particular of his defensive and adaptive resources. Almost all members of a healthy population were able to tolerate an 8-hour period of sensory deprivation as we have structured it. Those who could not appeared to be subjects in whom reality testing was impaired and where acting-out of impulses was a central defense, *i.e.*, borderline states and psychopathic personalities. Schizoid subjects seem particularly well able to tolerate isolation through the use of withdrawal because it is a situation harmonizing with this defense. Whether they would be able to work or solve problems is unknown, although it may be doubted, and the use of withdrawal as a defense is untenable in any situation demanding task orientation such as would be the case in space flight.

Imagery does not seem to correlate in extent or intensity with ego-integrity but rather with a history of hypnagogic imagery and is present in healthy and other subjects alike. There is probably a difference in ability to reality-test imagery in sicker subjects which might lead to its being perceived as real, *i.e.*, an hallucination. However, we are inclined to believe that the nature of the subjects' relationship to the experimenters, the fears of ego dissolution and the limitation on certain critical defenses are the major factors in the production of both hallucinations and delusions in sensory deprivation.

Which of the variables of the experiment seems to be crucial in the production of imagery? Our subjects have experienced imagery with the use of both blackout and translucent goggles and hence one of the prerequisites for imagery would appear to be non-patterning of visual stimuli. However, in the experiments of Vernon(5, 6) where vision and audition were blacked out, but subjects were allowed to move around, imagery was virtually absent. Thus deprivation of visual patterning is probably necessary, but not sufficient for imagery production.

We believe that the additional necessary factor for the production of imagery may be the limitations of the senses of touch and proprioception. Such restrictions were present in the McGill(1, 2), Boston City Hospital(7, 8), New York University(9), and National Institute of Mental Health(10) experiments as well as ours, and in all of these imagery has occurred. The importance of touch and proprioception in determining and maintaining the definition of the body can hardly be overemphasized. There is suggestive evidence that the first psychic

construct is that of the "body ego" and these sensations are both phylogenetically and ontogenetically the most primitive(12). We are thus impressed with the need for the study of touch and proprioception in sensory deprivation.

Conclusions

1. We found no relationship between gross clinical ratings of "ego-integrity" and the production of perceptual aberrations in this experiment.

2. Imagery occurs in subjects who habitually have hypnagogic imagery, both healthy and unhealthy. Less healthy subjects are more likely to interact with their imagery in an emotional way due to impared reality testing.

3. Sensory deprivation is an ambiguous situation which the subject structures according to his own personality and handles with his habitual adaptive and defensive resources.

4. We believe that sensory deprivation does not shed much light on the psychodynamics of personality save for reactions to solitude and loneliness. It does, however, offer unique opportunity for the study of the interrelations of the various components of the perceptual apparatus and for the elucidation of the nature and meaning of hypnagogic imagery. For these studies more careful perceptual measurements and more sensitive techniques permitting greater insight into the relationship of imagery to personality are necessary.

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PSYCHIATRIC OBSERVATIONS ON CONGENITAL AND ACQUIRED DEAFNESS : SYMBOLIC AND PERCEPTUAL PROCESSES IN DREAMS [1, 2]

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INTRODUCTION

There have been many investigations concerned with the psychology and psychopathology of the deaf and hard of hearing (1, 2, 3). It was not the purpose of this study to explore further these areas, but to focus upon specific perceptual and symbolic processes occurring in the dreams of deaf students. Relatively few studies have assessed the quality of perceptual experiences in dreams(4), and only an occasional investigation(5) has dealt with these in the deaf individual. The question might be asked, "What value is there in studying perceptual and symbolic experiences in the dreams of deaf individuals?" Although Gesell(6) has pointed out that the full term neonate assumes listening attitudes to the sound of human voice within the first fortnight after birth, tactile and visual sensory impressions appear to be as important as auditory stimuli for the pre-language child. Indeed, very young children can communicate reasonably well without words. Though older children and adults retain this ability as verbal language becomes increasingly more important, they utilize it chiefly in an unconscious manner, expressing it in posture, mannerisms, gestures, intuition and certain attributes of personality. A better knowledge of nonverbal communication processes would appear to be of value in understanding the psychological growth and development of man.

We have studied deaf college students who employ the language of signs and the manual alphabet as their principal mode of communication. Our major postulate was that an individual deprived of the normal auditory and verbal processes of perception and communication in his social and cultural environment, will uniquely incorporate necessary modifications of such perception and communication into his fantasy behavior and dreams.

METHOD

Twenty-six college students between the ages of 18 and 24 were the subjects of this study. Three categories of students were investigated (Table 1): 1. Congenitally deaf; 2. Acquired deafness before age 5; 3. Acquired deafness after age 5.

SUBJECT POPULATION

TYPE OF DEAFNESS	N	AGE RANGE (YRS.)	SEX
CONGENITAL	12	17-23	M-6, F-6
ACQUIRED BEFORE AGE FIVE	8	18-22	M-3, F-5
ACQUIRED AFTER AGE FIVE	6	19-23	M-4, F-2

TABLE 1

These students came from a wide variety of socio-economic backgrounds but had the following characteristics in common :

1. All were totally deaf with the hearing loss of 60 db bilaterally.

2. All were enrolled as full-time students at Gallaudet College, the national college for the deaf.

3. All had similar I.Q. levels, and a high proficiency of communication with sign language methods.

Semi-structured psychiatric interviews

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were conducted in the language of signs and with the use of the manual alphabet. The adequacy of such an interview procedure is dependent upon a number of factors. First, it is necessary for the interviewer to be proficient in the method of sign language communication not only in terms of an academic knowledge of the signs themselves, but also in terms of the multiple nuances of facial expression which accompany signing. Second, the interviewer must be accepted by and in good rapport with the subject. To accomplish both of these aims a member of the liberal arts staff of Gallaudet College (Dr. Siger) acted as interpreter in all interviews. Because the type of language employed by the deaf individual in part determines what he communicates, some consideration of communication processes employed by the deaf is necessary.

The avenues of communication open to the deaf include writing, speech, lip reading, the manual alphabet, and the language of signs. But the majority of the American deaf population communicate by means of the conventional language of signs, manual gestures which are, except for recognized dialectal variants(7), consistently and universally used to represent the same object, action, or idea. Users of the language all over the country understand each other perfectly; its use is consistent and universal to the extent that one may encounter comment on the style of delivery or "diction," as it were, of a given user of the language. There is a standard or orthodox language, upheld by purists, as with English, and there are forms of it filled with "colloquial" or "slang" expressions.

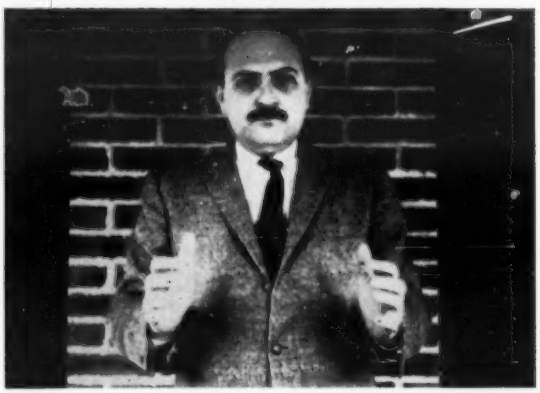
This conventional language of signs is not to be confused with the so-called "natural" language of mimicry attributed to the deaf. A linguistic analysis has been made of the spontaneously invented gestural communication of deaf children in an oralist school(8), but what is found, rather than a systematic language, is a makeshift and auxiliary means of communication operating somewhere between heightened free gesturing and depressed vocalization. Moreover, wide variation has been found among the gestures used by different children for the same action or thing. Finally, it has been found that when the lower face of the subjects is covered and they are thus deprived of seeing the silent mouthing of the spoken language, they are unable to comprehend one another. This kind of signing, then, is not entirely unlike the spontaneously invented or "home-made" signs that a hearing parent will use with a deaf child, or which will be called forth from anyone attempting to communicate with a non-hearing individual.

Returning, however, to the conventional sign language, at the present time a descriptive analysis of its linguistic structure is being made at Gallaudet College(7), the student body of which represents a cross-section of the entire young adult deaf population of the United States. As an instructional medium Gallaudet College uses the simultaneous method of communication, lip reading, hearing aids, the language of signs, and the manual alphabet, but outside the classroom the students communicate almost exclusively by means of the conventional sign language.

The number of words in the language is small; estimates and handbook lists range from 2000 to 5000 separate items. There would seem to be a paucity of words when compared to the tens of thousands in the English abridged dictionaries. But the comparison is misleading, for it is not so much that the sign language lacks a large vocabulary as that there are relatively few unique or individuated signs. The English language, as opposed to the sign language, is unusually rich in what may be called *vocabulary in echelon*. For example, to express the notion of extended size there are in English a number of morphologically unique words: *big, large, great, huge, massive, immense, gigantic, colossal, stupendous*.

The quality denoted by the adjective "big" is signed by placing the two hands in a neutral position before the body with palms facing and then drawing them apart, thus indicating extended size (Figure 1). There are no separate signs, to be sure, for *huge* or *gigantic*, but one can increase the spatial volume of the basic sign for "big" by extending the hands farther from the body, by drawing them farther apart, by changing the speed with which they are

BIG



HUGE

GIGANTIC

FIG. 1

customarily drawn apart, by gesturing facially, and by generally increasing muscular tension. This is something more than merely the equivalent in speech of pronouncing a word successively louder; it is closer to being an equivalent of vocabulary in echelon.

The language of signs also appears, by comparison with English, to be deficient in grammatical particles. One is familiar with such transcriptions of sign language as *Happy–much–I–be–here–with–you–all–day–now* for "I am indeed very happy to be here with all of you today." What is lacking, however, in verbal transcriptions such as the one we have given are the smooth, manually-produced ligatures between sign and sign and the inseparable facial gesturing which supplies for the signs what is provided for in speech by the intonation pattern made up of pitch, tone and accent(9, 10).

In signing what we have transcribed as *Happy–much–I–be–here–with–you–all–day–now*, the palm of the right hand is brushed upward against the heart two or three times; then both hands are extended before the body with fingers slightly spread, tips facing, and drawn apart in a single motion; then the index finger is raised to the lips and subsequently moved out from them in a straight line; then both hands are extended forward palms up and describe a circle with the right hand circling on a horizontal plane to the right while the left hand circles to the left simultaneously; then both hands making fists with the thumbs on top are extended before the body and brought together; then the index finger of the right hand is pointed out as if rapidly counting the assemblage; then with the left hand held out flat the right hand makes a complete circle around it, completing the action with its back resting on the palm of the left hand; then with the left arm held horizontally across the body, the right elbow is rested on the open left hand with the index finger of the right hand pointing past the elbow of the left arm, then the right arm with elbow still on the left hand and right-hand index finger extended is raised up and out; and then both hands are cupped with the palms up, extended before the body, and dropped slightly but decisively.

The facial gesture accompanying the statement described may appear to the onlooker not acquainted with the use of sign language as a *scowl*, but as we have said, facial gesture bears a closer relationship to the grammatical structure of the sign language than it does to English, and the particular gesture accompanying our statement certainly conveys no feeling of disapprobation when used in the manner we have indicated. In addition, the signer may begin with a sign of general affirmation such as that for *true* or *truly*, which is the same as the sign for *be*, and he may end with a comparable sign denoting general good will. The amount of time the entire statement takes to sign is less than the time it takes to say "It gives me great pleasure to be here with all of you today."

RESULTS

Frequency of dreams is found in Table 2.

FREQUENCY OF DREAMS (PERCENT)

	TYPE OF DEAFNESS		
	CONGENITAL	ACQUIRED BEFORE AGE FIVE	ACQUIRED AFTER AGE FIVE
EVERY NIGHT	84	50	17
FREQUENT	8	25	33
INFREQUENT	8	25	50

TABLE 2

Congenitally deaf students dreamed more frequently than those with acquired deafness. However, students with acquired deafness prior to age 5 had more frequent dreams than those whose deafness ensued after 5 years of age. The perceptual characteristics occurring in dreams are reported in Tables 3 and 4. The dreams of the congenitally deaf were characteristically in bright color usually described as "technicolor" and contained primary colors in high saturation and intensity. Also dreams of the congenitally deaf were for the most part three-dimensional rather than flat. The dreams of students with acquired deafness before age 5 resembled those of the congenitally deaf in terms of color and dimen-

COLOR AND DIMENSION IN DREAMS
(PERCENT)

PERCEPTUAL EXPERIENCE	TYPE OF DEAFNESS		
	CONGENITAL	ACQUIRED BEFORE AGE FIVE	ACQUIRED AFTER AGE FIVE
COLOR	92	75	17
BLACK AND WHITE	8	25	83
3D	84	87	50
FLAT	16	13	50

TABLE 3

MOTION AND VIVIDNESS IN DREAMS
(PERCENT)

PERCEPTUAL EXPERIENCE	TYPE OF DEAFNESS		
	CONGENITAL	ACQUIRED BEFORE AGE FIVE	ACQUIRED AFTER AGE FIVE
STATIC	84	75	83
MOTION (OTHER THAN SIGNING)	16	25	17
VIVID ON RECALL	92	87	67
FAINT ON RECALL	8	13	33

TABLE 4

COMMUNICATION PROCESS IN DREAMS
(PERCENT)

TYPE OF DREAM (AFFECTIVE COMPONENT)	COMMUNICATION PROCESS	TYPE OF DEAFNESS		
		CONGENITAL	ACQUIRED BEFORE AGE FIVE	ACQUIRED AFTER AGE FIVE
PLEASANT	LANGUAGE OF SIGNS	33	37	33
	PRIMITIVE SIGNS	17	0	0
	NON-VERBAL	42	50	50
	"SOUND"	8	13	17
ANXIOUS	LANGUAGE OF SIGNS	17	38	33
	PRIMITIVE SIGNS	75	0	0
	NON-VERBAL	8	50	50
	"SOUND"	0	12	17
NEUTRAL	LANGUAGE OF SIGNS	84	63	33
	PRIMITIVE SIGNS	0	0	0
	NON-VERBAL	16	25	50
	"SOUND"	0	12	17

TABLE 5

sion while dreams of students with acquired deafness after age 5 tended to lack color and were evenly divided between flat and three-dimensional appearances.

The perception of motion of objects other than movement involved in signing occurred infrequently in the dreams of both the congenitally deaf and acquired deaf. There was a striking degree of vividness for dreams on recall by both the students with congenital deafness and acquired deafness prior to age 5. This was less so for students with acquired deafness after age 5.

The communication processes experienced in dreams are reported in Table 5. Dreams are divided into 3 general categories, pleasant, anxious and neutral, based upon the affect the subject experienced while dreaming. Communication processes are divided into 4 categories :

1. Language of signs : the standard method of communication by signing used in everyday life.

2. Primitive signs : gestural communication employed by parents or parental figures in early childhood before the standard language of signs was learned. Such gestures usually conveyed strong affective qualities such as anger, disapproval, warning, fear, and occasionally approval and praise.

3. Non-verbal : communication without the language of signs, primitive signs or "sound" via an intuitive form of understanding.

4. "Sound" : a mixture of auditory and frequently tactile sensory impression. Relatively simple messages were conveyed by this means, not complex thoughts or ideas.

In "pleasant" dreams, communication to or by the subject occurred most frequently in a non-verbal form with the language of signs appearing next frequently. "Sound" perception occurred infrequently in all groups of subjects but it tended to appear most frequently in those subjects with acquired deafness after age 5. Primitive signs appeared in the dreams of the congenitally deaf but not in the other groups.

In "anxious" dreams or nightmares of the congenitally deaf there was a striking prevalence of primitive signs. These signs, though originally employed by parents or parental figures, could be signed in dreams by people who were quite unknown to the subject. It is significant that no primitive signs appeared in the anxious dreams of the other two groups. In other respects the anxious dreams resembled those of the pleasant dreams for the three groups of students.

In "neutral" dreams there was a tendency for an increased degree of non-verbal communication and a decreased degree of language of signs from congenital deafness to

acquired deafness after age 5. No primitive signs appeared for any students in neutral dreams and the incidence of "sound" in these dreams was also small.

Discussion

It is clear from our data that the dreams of our deaf students are distinctly different from the dreams of the hearing(4, 11, 12). The differences reside in greater vividness, depth of spatial dimension, and color, as well as generally greater frequency or, more accurately, greater frequence of recall. How can we explain these differences? It seems to us that much may hinge on the balance between dream repression and dream recall.

It is a familiar observation that dreams in all of us may be vividly remembered on awakening and yet disappear a moment later. It has been our experience that the occurrence of sensory stimulation, particularly auditory stimulation, contributes greatly to such a disappearance. A word from your wife, a cry from the baby, or the sound of the alarm clock, and your dream may be gone forever. The deaf do not have this type of stimulation and in their soundless awakening, dreams linger on and retain their vividness and color. Perhaps this is a small compensation for the dullness of a completely silent existence.

It may be considered a partial corroboration of the reasoning just discussed that in experimental sensory deprivation(13, 14), visual imagery, fantasies, and hallucinatory experiences are reported as unusually vivid and colorful, much as in the dreams of the deaf. It may be hypothesized that just as sensory deprivation, with its weakening of the secondary process and the ties to outer reality, encourages the emergence of the primary process with its primitive and instinctual characteristics, sensory stimulation, especially auditory stimulation, facilitates the phenomenon of repression and may be a necessary concomitant of it.

An alternative explanation to the vividness and frequency of dreams in the deaf is the possibility that the dream censor and indeed the entire superego structure in the deaf may be impaired. Isakower(15) believed the development of the superego was intimately associated with significant auditory experiences. However, Knapp has pointed out(16), "The congenitally deaf do not have a congenital atrophy of conscience. Although the ears contribute to superego formation, they are not its sole architect." We also cannot agree with Isakower's formulation in the sense of its being an absolute one, since we have seen abundant evidence of superego structuring in our deaf population. For example, the appearance of primitive signs in affectively-toned dreams of the congenitally deaf indicates introjection and subsequent displacement of very early non-verbal superego material. Actually, one of the opportunities which a deaf population offers is that of studying the non-verbal aspects of superego functioning, since the kinesic language of the congenitally deaf, though modified later by the more formal symbols of the language of signs, is not obscured by the verbal symbols of the hearing.

The characteristic differences in the dreams of the deaf were most marked in the congenitally deaf, less prominent in those with acquired deafness before the age of 5, and least noticeable in those with acquired deafness after age 5. If these differences are related to facility for repression as correlated to auditory sensory input, then our findings would suggest that the template for this type of repression is laid down in the very early years of life. Such a conclusion, of course, is entirely consonant with standard psychoanalytic theory and emphasizes the growing realization in both animal experimentation and developmental work with children of the importance of the past sensory history of the organism.

Summary

Twenty-six deaf college students were interviewed in the language of signs and manual alphabet to obtain information concerning the symbolic and perceptual processes experienced in their dreams. It was found that the dreams of the congenitally deaf were vivid, brilliantly colored, and reported as frequent in occurrence. Usually the language of signs was the means of communication in the dream, but in dreams in which affect was prominent, primitive signs were often utilized. The characteristic differences in the dreams of the deaf were most marked in the congenitally deaf, less marked in those with acquired deafness be-

fore age 5, and least marked in those with acquired deafness after age 5.

The relevance of these findings to super-ego formation, non-verbal communication processes, and recent observations in experimental sensory deprivation is discussed.

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THE EFFECT OF VISUAL STIMULATION ON HALLUCINATIONS AND OTHER MENTAL EXPERIENCES DURING SENSORY DEPRIVATION [1]

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Sensory deprivation is a new experimental approach to the problem of hallucinations and other abnormal mental states. Investigators, using different methods, have reported a wide variety of results. In general, those experiments in which sensory input was drastically cut down but movement was permitted produced very little hallucinatory experience(1, 2), while those in which there was more sensory input in the form of sensory monotony, but movement was restricted, brought about more hallucinatory experience(3, 4, 5). The question of what basic factors cause the mental phenomena in sensory deprivation is still unsettled.

We have designed an experiment to test the hypothesis that it is not the absence of sensory stimulation *per se* that produces the effects of sensory deprivation, but the absence of *meaningful* stimulation. Visual stimulation was added to subjects in a previously standardized sensory deprivation procedure and the prediction was made that this stimulation would not prevent the mental aberrations that usually result.

PROCEDURE

Ten adult male college and graduate students, recruited through the offer of pay per hour, served as subjects. The procedure, which has been described in detail elsewhere(5), involved the use of a tank-type respirator with the vents open, a semi-darkened room, the wearing of cardboard cuffs over the arms and legs, and the presence of a constant repetitive auditory stimulus from the motors of the respirator and an air-conditioner. Heart rate was monitored by an electrocardiograph and the subjects' verbalizations were tape-recorded. A white 150-watt light was flashed on a random schedule, determined by a table of random numbers, as follows: one one-second flash every 1 to 9 minutes starting after a randomly chosen interval of time from the beginning of the experiment; supplementary flashes of a random duration (1 to 20 minutes) occurring every 50 to 99 minutes, determined randomly. The colored Rorschach cards were also flashed on the wall, through the use of a tachistoscope, in random order and on a random schedule of one every 50 to 99 minutes for a random duration of 0.1 to 1.0 second.

Subjects were kept in the respirator 10½ hours [5] unless they asked to be let out earlier. Psychological tests were administered and interviews were conducted immediately after the subjects left the respirator and in a control period. The mental experiences during the experiment were classified as: analogies, daydreams, fantasies, pseudo-somatic delusions, illusions, and hallucinations, using the same criteria as in previous experiments in this laboratory(4, 5).

RESULTS

The results are shown in Table I. Five of the 10 subjects remained in the tank for the required time, the others leaving after intervals of 38 minutes to 6¾ hours. Six subjects experienced hallucinations or illusions such as: hallucinations of playing baseball, skin diving, being on a troop ship, feeling chips of paint or specks of dirt falling from the ceiling, water dripping, delusions of the eggnog being poisoned,

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[3] Teaching fellow in psychiatry, Harvard Medical School, Chief resident in psychiatry, Boston City Hospital.

[4] Asst. clin. professor of psychiatry, Harvard Medical School, Physician-in-chief, Psychiatry Service, Boston City Hospital.

[5] On the basis of past experience, 10½ hours was chosen as the optimum period, since almost all subjects who experienced psychological changes did so within this period of time(5).

SUBJECTS	ANALOGIES	DAYDREAMS	FANTASIES	PSEUDO-SOMATIC DELUSIONS	ILLUSIONS	HALLUCINATIONS
A	X	X		X		
B	X				X	
E	X	X	X	X		X A, B III
J		X				
K	X	X				X A, I
L						
M	X				X	
P		X			X	
T			X			
W	X	X	X			X A, B III
	6	6	3	2	3	3

TABLE 1

MENTAL EXPERIENCES IN 10 SUBJECTS EXPOSED TO MODIFIED SENSORY DEPRIVATION :

Hallucinations are classified, according to Vernon(1) : Type I–"Flashes of light, flickering lights, dim glowing lights, *etc.*, which appear in the visual periphery." Type II–Hallucinations "of definite shape which are geometic in nature (squares, circles, *etc.*)." Type III–"Structured integrated scenes which sometimes are even animated." In addition, "A" denotes that the subject had insight that his "hallucination" was not real, "B" denotes the absence of such insight.

feeling shocks from the electrocardiograph leads, smelling the electrode jelly melting.

The subject who stayed 38 minutes screamed to be let out, tore off his electrocardiograph leads, ripped his equipment apart and clawed wildly at the apparatus. Though he looked terrified, he denied completely any anxiety or discomfort.

A statistical comparison of the results obtained in this experiment with those in previous experiments(4) (chi square test) and(5) (Fisher Exact Test), in which no visual stimulation was used, indicated no significant differences with respect to the number of subjects who experienced the different categories of mental aberrations.

When the psychological performance test scores were compared with the test scores taken in a control period, the results indicated an impairment in the Wechsler digit symbol test significant to the .05 level (Sign test), but there were no significant differences in the block design and hidden figure tests. Subjects who did well on the hidden figure test tended to have hallucinations and illusions (significant to the .05 level on the Mann-Whitney test). The Smith and Beecher Adjective Check List(6) indicated that subjects changed consistently in their feeling states during the experiments. They

experienced significantly (.05 level Wilcoxon Sign-rank test) more feelings of mental clouding, somatic complaints, and physical inactivity, while they had fewer feelings of mental activity, elation, rebelliousness, friendliness, and calmness. It is also of interest that those subjects who experienced the most mental clouding had the greatest drop in heart rate from the initial rapid heart rate at the beginning of the experiment to their more stable slower heart rate during the middle of the experiment. The rank order correlation of mental clouding with drop in heart rate was 0.66 (significant to the .05 level).

DISCUSSION

The basic theoretical framework implicit in many of the experiments in sensory deprivation, in fact, implicit in the term "sensory deprivation" itself, is that the hallucinations and other reactions produced in isolation experiments are a result of literal deprivation of sensation. It has been felt that the brain needs some quantity of, or change in, sensory input to keep it alert, through alerting mechanisms of various types. In psychoanalytic theory, the functioning of the "secondary process" is viewed as being dependent on the entrance of sensory input or change in quantity of input into the mental apparatus. In the absence of such input or changing input, the primary process tends to emerge. In brief, the cortex, and the secondary process are considered not to be autonomous, but in need of a quantity of sensory input to drive it. We feel that this explanation needs modification. If deprivation of quantity of sensation *per se* caused the hallucinations, it would follow that in situations where there is severe sensory deprivation, hallucinations would occur frequently and be severe, and as any sensation is added to the deprivation situation the frequency and severity of the hallucinations would decrease. However, if hallucinations occur not as a result of deprivation of quantity of sensation *per se* but rather as a result of isolation from meaningful contact with the outside world it would follow that as sensation is added to the deprivation situation, the frequency and the severity would *not* decrease unless the stimuli that are added are meaningful. That is, as more and more sensation is introduced we would expect some hallucinations until there is considerable contact with the outside world.

What we have done is deliberately to add sensation to a sensory deprivation situation by introducing a quantitative change in sensation (a flashing light). The characteristic changes consequent to sensory deprivation have generally been mental aberrations, including hallucinations, emotional disturbances and intellectual impairment. Our experiment demonstrated all of these. Our results are consistent with the hypothesis which emphasizes the parameter of *meaning*, since even though considerable changing sensation was added, the hallucinations and other effects did occur and is inconsistent with the hypothesis emphasizing the role of sensation *per se*.

Our findings of a deficit on the digit symbol test is consistent with Heron's *et al.*(7) finding of a similar deficit after their sensory deprivation situation. The absence of a deficit on our other performance tests may be due to the small size of our sample in relation to the reliability of the tests.

The drop of heart rate of the mentally clouded subjects suggests that the physiological response to stress in terms of heart rate may be less in subjects who react to sensory deprivation with subjective mental clouding. Perhaps the mental clouding serves as a withdrawal from the situation and thus tends to reduce anxiety and hence heart rate.

It should be noted that we have studied but one of the many ways in which the results of sensory deprivation could be modified by adding stimulation. Sound, tactile stimulation, and other types and durations of visual stimuli could have been used. Further research is indicated.

CONCLUSIONS

While much of the work in sensory deprivation implies that sufficient sensory input will prevent the occurrence of the disorganizing effects seen, our results suggest that the parameter of meaningfulness of input should be considered. The alerting action of random visual stimulation is not sufficient, under the conditions of our ex-

periment, to prevent the occurrence of mental aberrations. It appears that what the brain needs for normal functioning is not quantity or change in sensation *per se*, but a continuous meaningful contact with the outside world.

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OBSERVATIONS ON MENTAL SYMPTOMS IN EYE PATCHED PATIENTS: HYPNAGOGIC SYMPTOMS IN SENSORY DEPRIVATION [1]

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Psychotic symptoms in patients with eyes bilaterally patched have been reported previously(1), but their development is not adequately understood(2). A high incidence of lesser mental symptoms in patients after operation for senile cataracts has also been noted(3). It occurred to us that such minimal disturbance might throw some light on the origin of the mental complications of sensory deprivation in general(4, 5, 6). Accordingly, we studied patients with eyes bilaterally patched because they presented visual and some proprioceptive deprivation and a relative degree of social isolation. In addition to the confinement to bed, patients were denied visitors for two days after surgery. The mental symptoms arising under these circumstances were therefore considered in part at least the result of relative sensory deprivation [5] and isolation. A new symptom peculiar to our study suggests that hypnagogic and other states of reduced awareness are highly contributory to the mental abnormality.

PROCEDURE

Observations for mental symptoms were made on 88 patients with cataracts and on 10 with detachment of the retina, admitted for eye surgery from October through December, 1958. Patients were 8 to 88 years old. A small number could not speak English, and some had impaired hearing. Patients with detachment of the retina had their eyes patched from 7 to 14 days prior to surgery and from 14 to 30 days afterwards; those with cataracts wore patches only for 24 hours after their operations. The patients with detachment of the retina represent our core material. Because they are patched for long periods, they have a greater incidence of mental pathology. Furthermore, as a group they are younger than cataract patients, with an average age of 39 compared to 60, and can be more readily observed free from complications of the effects of the operation and medicines.

Psychiatric interviews averaging one hour were carried out by two psychiatrists and two supervised medical students [6] before the patients' eyes were patched. When this was impossible, such examinations were conducted during or after the patching. The interview was initially permissive (8) so as to obtain the picture of emotional reactions and life situational factors.

Mental disabilities which arose during patching were observed daily until they disappeared or were considered chronic and perhaps irreversible. No psychological

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[5] Formerly we referred to isolation and sensory deprivation together for historical reasons. Many of the facts uncovered by the recent experiments on sensory deprivation were known long before from the experiences with social isolation. Furthermore, isolation and sensory deprivation usually occur together; indeed it is difficult, if not impossible, to create sensory deprivation without personal isolation. At first glance it appears as if the periods of sensory deprivation which suffice to produce symptoms are too short for social isolation to be a significant factor. Elsewhere(7) we present considerations to indicate that such may not be the case. Social isolation is in effect conceptual deprivation. Should conceptual deprivation turn out to be as significant as, or a more basic factor than, sensory deprivation, then isolation will again receive more attention as a contributory factor.

[6] Don Morrison and Jerry Lackner, whom we wish to thank for their assiduous assistance. Although further acknowledgement is due the entire ward personnel for their cooperation, we are particularly indebted to two nurses, Mrs. Mary Doughty and Miss Barbara Collins, for their unstinted devotion and many suggestions.

tests or social case histories were available because of lack of funds. Nor was there sufficient psychiatric personnel to monitor the patient's behavior around the clock. The psychiatric team saw the patients daily and responded when called for behavioral manifestations which occurred between visits. Some patients with cataracts were repatched for 8 to 24 hours after discharge from the hospital; some, before surgery; and some were observed through a second operation on the other eye.

Patients were observed, therefore, for the presence of mental symptoms before, during, and after bilateral patching of their eyes; hence, each patient served as his own control. The situation under observation was essentially one of sensory deprivation. Factors extraneous to sensory deprivation also present in our patients include anxiety, drugs, associated illness, and immobilization effects beyond diminished proprioceptive and tactile stimulation. Some of these factors were excluded at least in part by repatching tests and by selecting younger patients with detachment of the retina.[7]

RESULTS

Our report lends itself to division into two parts: data about 1. Mental symptoms in sensory deprivation and 2. Symptom formation. The first of these is discussed here briefly.

We noted a high frequency of mental symptoms among the patients whose eyes were covered bilaterally. These symptoms (noted below) included all or most of those reported in the sensory deprivation experiments of Hebb(4), Lilly(5), and Solomon(6). In addition, many of our patients sat up or unpatched their eyes despite contrary instructions. This noncompliance, previously not identified, seems to be a mental symptom and part of the sensory deprivation syndrome. The other minimal symptoms included minor degrees of clouding, restlessness, perceptual distortion (pseudohallucination), thinking disturbances, mood changes, and psychophysiologic manifestations. In patients with real or suggestive brain damage, there were also delirioid symptoms, *e.g.*, confusion, disorientation, memory impairment, vivid hallucinations, subcortical hyperkinetic activity, and subsequent amnesia. Many of these symptoms were of rather short duration and often disappeared spontaneously or while the patient was interviewed.

1. Mental symptoms occurred in 100% of the retina detachment cases and in 30% of the cataract extraction cases (Table 1).

TABLE 1

MENTAL SYMPTOMS IN PATIENTS WITH EYES BILATERALLY PATCHED

	Detachment of Retina Patients		*Cataract Extraction Patients*	
	No.	*Percent*	*No.*	*Percent*
All Mental Symptoms	10	100%	26	30%
Unpatched eyes	9	90%	8	9%
Sat Up	8	80%	7	8%
Hallucinations	4	40%	3	4%
Disorientation	—	—	14	16%
Total	10	100%	88	100%

The greater incidence of mental symptoms in the patients with detached retina is to be attributed to the longer period of patching. These mental complications in retinal detachment cases have not been mentioned in the literature that we have examined, perhaps because of the mildness of the manifestations.

2. Patients not speaking English and those with hearing defects, antecedent organic brain damage, or a history of alcoholism had a higher incidence of symptoms (Table 2).

3. The incidence of hemorrhage during the period of eye coverage was 5 times as common in the group with mental symptoms as in the group without (Table 3). The hemorrhages were equal in both groups in the period after the eyes were uncovered. The number of instances were too small for adequate statistical evaluation. It requires, however, no great imagination to see why the patient who sits up, walks about or unpatches his eyes might indeed sustain a hemorrhage.

[7] Those minutiae of procedure which may be significant to a critical evaluation of the investigative work will appear in subsequent papers(7). Here only the chief features of the procedure are mentioned.

TABLE 2

CONTRIBUTORY FACTORS TO MENTAL SYMPTOMS IN PATIENTS WITH EYES BILATERALLY PATCHED

	Detachment of Retina		*Cataract Extraction*			
	Patients With Mental Symptoms		*Patients With Mental Symptoms*		*Patients Without Mental Symptoms*	
	No.	*Percent*	*No.*	*Percent*	*No.*	*Percent*
Total	10	100%	26	100%	62	100%
Not Speaking English	1	10%	4	15%	1	2%
Impaired Hearing	3	30%	11	42%	18	29%
History of Alcoholism	4	40%	3	12%	1	2%
Average Age	39 years		60 years		60 years	

TABLE 3

SURGICAL COMPLICATIONS IN CATARACT EXTRACTION

	With Mental Symptoms 24 Patients		*Without Mental Symptoms 59 Patients*	
	No.	*Percent*	*No.*	*Percent*
I While Patched				
Hyphema	4	17%	2	3%
Iris prolapse	0	—	1	2%
Flat Chamber	1	4%	1	2%
II Post Patching				
Hyphema	2	8%	5	8%
Iris prolapse	0	—	1	2%
Flat chamber	3	12%	5	8%

4. Bilateral patching of the eyes of patients on an ophthalmologic service has impressed us as another technique for the study of basic problems in sensory deprivation which has special advantages. This technique encompasses elements of economy, ready availability, ready repetition, and high motivation of the subjects. This procedure is one of great sensitivity due to self-maintained voluntary controls and involves a lesser degree of sensory deprivation than the experimental methods of Hebb(4), Lilly(5), Solomon(6) or even Gibby(9). Although there are a number of complicating variables in any random population of eye cases, such as anxiety, drugs, disease and operative trauma, most of these can be eliminated by appropriate selection of cases and other controls.[8]

[8] Prevention of mental symptoms in patients whose eyes are bilaterally patched is currently under investigation. Patients on the women's ward, are receiving increased interpersonal and symbolic stimulation ; those on the male ward are being used as controls.

DISCUSSION

By studying the minimal manifestations, some light has been thrown on the genesis of symptoms of sensory deprivation in patients with eyes bilaterally patched.

NON-COMPLIANCE—A SYMPTOM OF IMPAIRED INHIBITORY CONTROL

1. *Eye patching effects resulted in a special mental symptom which we call non-compliance.* We define non-compliance as unpatching and movement contrary to both the doctor's instruction and to personal motivation.

An early striking observation was that patients frequently failed to obey the physician's two instructions : to lie recumbent and to leave the patches in place. Although all patients were told that restoration of vision depended on full compliance with these instructions, a fair number did not obey (Table 1). One nurse, referring to a patient who sat up shortly after having been admonished for a similar offense, said, "That patient isn't mental, but he isn't right." He had acted contrite the first time but soon repeated the misdemeanor. In the past, such actions by patients have not been considered a mental symptom (unless they occurred in postoperative delirium or confusion), but were commonly attributed to lack of cooperation.

Non-compliance is not satisfactorily explained as lack of cooperation. These patients did not appear rebellious or incapable of accepting authority. Their nonconformance seemed all the more strange because they seldom complained about the restrictions or the difficulty in

carrying them out. Instead, when confronted with the act, they either rationalized or gave an irrational reply, as if somewhat clouded.

It is an involuntary mental symptom. The fact that patients usually remove both patches suggests a clouded state. If the need to see were the only reason for not obeying instructions, the removal of the patch on the good eye alone would suffice. It seems clear, then, that non-complying acts are mental symptoms.

2. *The mental symptom of non-compliance occurred primarily in sleep or on awakening—in periods of reduced awareness.* Nine of the 10 patients with detachment of the retina unpatched their eyes. Six of the 9 performed this action during sleep or on awakening.[9] Some of these papatients had concomitant hypnagogic hallucinations.

Case 1. A patient who contended that he turned over and took off the patches in his sleep also reported waking one morning seated on the edge of the bed, thinking that he was in his own home about to go downstairs to breakfast. As his feet dangled over the side of the bed, he suddenly realized that they did not touch the floor. He then became mindful that he was in a high hospital bed and became clearly oriented immediately.

Case 2. Another patient "dreamed" he was seeing a white farm house. As he wakened, he pulled off his eye patches and sat up to see the house more clearly, since it seemed so real to him. At first he thought he saw the same house, and only later realized it was but a white sheet over a chair.

3. *Other possible causes of the non-compliance were not as significant as the state of reduced awareness.* Patients, presumably, might not comply with instructions for various other reasons, such as inability to accept authority, severe backache, toxic confusion with hyperactivity or hallucinatory fear, "action-stimulus" urge (Lilly) or a desire to see. Although we have had examples of all of these in our patients, the occurrence in reduced states of awareness was the most common one to come to our attention.

However, most patients were on medication and this could be a contributory cause. Almost all patients received nembutal gr. 1^{ss}, second gr. 1^{ss} or chloral hydrate gr. vii^{ss} for sleep each night and some Miltown 400 mg. t.i.d. We tried to set up adequate controls on drug effects. We did not see hypnagogic symptoms from these drugs in the same dosage ranges in other patients of comparable age on the eye ward and elsewhere. However, a more meticulous search might show them.

Other complicating factors such as anxiety, associated disease and old age were also excluded in our control group of patients with detachment of the retina. Extrasensory effects of immobilization such as loss of nitrogen and calcium and even profound loss of body weight, were more difficult to exclude(11).

Some mental symptoms of the eye-patched patients (non-compliance and pseudo-hallucinations), appear, therefore, to have been caused by the concurrence of sensory deprivation and states of reduced awareness. This was suggested first by the occurrence of such symptoms most often in periods of sleep or awakening. Second, other possible causes of the non-compliance, were not as prevalent nor as likely to play a casual role.

4. *The occasional appearance of non-compliance and other mental symptoms in daytime hours may be explained by the fact that these patients have periods of reduced awareness also during the daytime.* Although we do not have data on the incidence of such occurrences, the following considerations lend support to this hypothesis.

Covering of the eyes in the patients observed by us, tended to induce more periods of light sleep and of reduced awareness in the daytime than would occur normally. This observation was reaffirmed and emphasized when one of us (E. Z.) subjected himself to the Gibby(9) procedure of lying flat in bed with eyes covered and ears plugged for 8 hours. He was amazed to learn from the record how

[9] In the large series of cases of the retina at the University of Stanford Ophthalmologic Service of Dr. Karl Pischel(10) nearly all patients have removed their eye patches during sleep at least once during their hospital stay.

frequently he had fallen asleep as judged by observers of his snoring.

Hypnagogic states[10]—which are states of reduced awareness—have been known to produce other, similar, mental symptoms. Some symptoms of cerebral origin are prone to occur in light sleep. One sees myoclonic jerks and hypnagogic hallucinations in the normal person, convulsions in epileptics and nocturnal deliria in patients with toxic and organic brain disease.

A state of reduced awareness would logically involve a loss or relaxation of normal self controls or inhibitions—and make possible the mental symptom of non-compliance. The eye-patched patient is highly motivated to cooperate because his vision is at stake. Despite pain or discomfort, he will not usually remove the patches or change position during full consciousness. There is the extra stress that withdrawal from the treatment procedure is condoned neither by the physician nor the patient. On the other hand, these acts take place semi-automatically without external aid in sleep or in states of impaired awareness.

The responsibility for obeying the doctor's instructions is the patient's; he can at any time disobey them, even without full awareness of what he is doing. He has an urge, continuous or intermittent, to change position and remove the patches. He usually resists it because of his high motivation. However, control may be at the price of constant vigilance. In the hypnagogic states and others of reduced awareness, vigilance is often impaired, permitting forbidden actions to take place unopposed.

In the other sensory deprivation experiments, conditions are usually quite different. The subject as a rule cannot terminate the procedure unaided. Although the subject has the option of terminating the experiment at any time, he must indicate his desire to the experimenter before he is released from the chamber or respirator. Goal-directed speech is required to make his request known. Since such speech cannot be well formulated in a state of reduced awareness, his discomfort must rouse him before he can make these wants known. This behavioral sequence differs from the semi-automatic response which suffices in the situation we studied.

In addition, there is less motivation for the volunteer to endure discomfort (and less insistence by the experimenter) than for our patients, whose vision was at stake. Therefore, the volunteer may be more prone to discontinue the procedure. Such termination of the experiment has not been mentioned as a mental symptom. Nevertheless, the equivalent of the nonconformance is noted sometimes in reports on sensory deprivation. Solomon(5) mentions two subjects who could not wait to be released. They strove wildly to escape after indicating their desire to terminate the isolation in the respirator. In most instances, the subject indicates his desire to terminate the experiment, and his capacity to control the stress does not come into bold relief.

Our technique has turned out to be a sensitive indicator for such lack of inhibitory control. The classic sensory deprivation experiments are less so.

The transient character of the mental symptoms is consistent with the transient character of reduced awareness. The transience of many of the symptoms requires analysis. Inquiry as to the cause of this transience leads to further support for the thesis that such symptoms probably occur frequently in unrecognized periods of reduced awareness. Hypnagogic hallucinations probably induce a return to full consciousness because of the strength of accompanying emotions or movements.

[10] Although the symptoms of non-compliance and hallucination in our patients occurred predominantly in sleep or hypnagogic periods, we are not at all sure as to the degrees of impaired awareness or consciousness that are predisposing to this symptom formation. In the situation under which our patients were studied there were many more periods of sleep and arousal during the 24 hours than under natural circumstances. There are also more periods of less alertness, *e.g.* periods of difficulty of grasp, of day dreaming, of reverie and of aimless wandering of thoughts. In speaking of reduced periods of awareness we refer to the entire group of such states rather than the more restricted hypnagogic period. Furthermore, we have used the term hypnagogic to include both the transition periods from sleep to wakefulness and from wakefulness to sleep (the so-called hypnopompic period).

Presumably, unpatching of the eyes or sitting up may do the same thing. Therefore, symptoms dependent on suppression of reality testing would readily disappear when alert consciousness returns.

So far we have pointed out the high incidence of non-conformance in our patients during sleep or hypnagogic states. Also we have given reasons for expecting this and other symptoms of sensory deprivation to occur frequently in unrecognized states of reduced awareness. Perhaps the following set of symptoms have a similar time of occurrence, although they are reported here because they have a special significance of their own.

DELIRIOID SYMPTOMS SUGGESTIVE OF SUBCLINICAL BRAIN DAMAGE

It is our impression that bilateral patching of the eyes tends to produce delirioid symptoms in patients who have demonstrable or subclinical organic impairment of brain functions. The evidence from our cases, although not yet conclusive, is highly suggestive. Cameron(12) has demonstrated in senile patients with nocturnal deliria that the delirious states can be reproduced in the daytime by placing the patient in a dark room. We have seen these induced results in our patients with organic brain syndrome (both with and without a history of antecedent deliria), but more impressively in patients in whom the chronic brain syndrome is absent or suspected. In the latter cases, there may be some indications that antecedent brain damage might have occurred.

A few brief examples follow:

A 74-year-old senile man with nocturnal deliria of 6 months' duration experienced delirium while his eyes were patched following a cataract operation.

A 76-year-old male with borderline memory and emotional lability of the arteriosclerotic type, had two post cataract extraction deliria. These symptoms were reproduced in a progressively milder manner during two subsequent re-patching tests.

Of 10 patients with prolonged patching, 5 had a history of heavy drinking. None of them had a past history of delirium tremens or were currently experiencing it; none had been drinking heavily at the time; and none had a chronic brain syndrome. However, 4 of these 5 patients developed hallucinations on patching.

Seven hours after surgery for laceration of the eye, an 8-year-old boy manifested visual hallucinations, auditory illusions, somatic delusions, marked fear, gross tremulousness, and grinding of his teeth. For about 45 minutes the psychiatrist and a nurse tried in vain to comfort, reassure, and quiet him. All of his symptoms instantaneously disappeared when his good eye was unbandaged. When he closed his eyes about 5 minutes later, he suddenly sat up startled and said, "It's coming back." He was asked to open his eyes and the symptoms disappeared again. This patient was mentally retarded, at least one year. Two years previously for a period of several months, he wakened during the night and would "talk and laugh" and then have difficulty falling asleep for a few hours afterwards.

Perhaps the release of symptoms referred to above may also be manifested during periods of reduced awareness, since delirious symptoms are prone to occur at night. Here the temporary suppression of the highest inhibitory control of discriminative logic and attentive alertness may play a significant role.

MENTAL SYMPTOM FORMATION IN SENSORY DEPRIVATION

Does the finding of mental symptoms during periods of reduced awareness in our study have any significance for the basic problems in sensory deprivation? We can foresee 3 consequences.

1. It calls for a review of the sensory deprivation experiments, or a repetition of some of these, to determine the relation of all or some of the mental symptoms to hypnagogic periods.

2. It focuses attention on a new set of physiologic circumstances, those of the hypnagogic period, which need to be evaluated in the understanding of at least a number of the sensory deprivation symptoms.

3. It points to the possibility that periods of reduced awareness represent a basic substratum for the syndrome of mental symptoms produced by sensory deprivation, isolation, sleep deprivation, semi-starvation and certain toxic states.

Before concluding this discussion, it might be well to point out some of the difficulties in evaluating the significance of

hypnagogic occurrence of symptoms in the mechanism of the mental syndrome. Interpretation is hampered by unknowns.

1. *Frequency of symptoms in reduced awareness.*—We do not actually know how often symptoms occur in unrecognized periods of reduced awareness. We have indicated why we think the incidence is high. It is difficult to determine the precise incidence. Round-the-clock observation and continuous monitoring with the electroencephalograph for sleep spindles or slow waves might be helpful, but these are tedious approaches and might not yield the answer.

2. *Frequency of hypnagogic or other "reduced awareness" symptoms in sensory deprivation experiments.*—Although such periods of reduced awareness are increased by our procedure, we do not know that the same is true in the other sensory deprivation experiments. There is much reason to believe that such is the case, since the basic conditions are similar. Difficulty in concentration and reduced awareness have been reported in sensory deprivation experiments. The subjects of Goldberger and Holt (13) also slept frequently during their experiment.

3. *Etiologic significance of reduced awareness.*—Is the chief significance of our finding of hypnagogic symptoms one merely indicating time of their occurrence or is it possible that conditions peculiar to this state of half sleep—half wakefulness have etiologic significance for the manifestations? We incline to the latter point of view. The hypnagogic period is characterized by a diminution of the highest cerebral functions, *e.g.* discriminative thinking or logic, attention and inhibitory control. It is the absence of those functions that contribute to the lack of reality testing, the katathymic imagery, and involuntary movements of this period. The role of conceptual or symbolic deprivation may even be more important than the lack of sensory stimulation or variability of such stimuli. Although sensory deprivation tends to reduce alertness and attention, and induce hypnagogic periods, the more primary condition may be this state of reduced cerebral functioning, which can also be caused by brain disease and many other conditions. Here, suffice it to say that in sleep deprivation, when the subject is stimulated constantly to remain awake, even with the most variegated stimuli, he still develops symptoms similar to those of the sensory deprivation experiments(14). One suspects periods of reduced awareness are also increased. The common denominator for the symptom formation under conditions of both sensory deprivation and sleep deprivation may be reduced awareness rather than the diminution of sensory stimuli.

4. *Persistence of symptoms beyond return to full awareness.*—In postulating that periods of reduced awareness with temporarily impaired logical discrimination, attention and inhibition are etiologic, one must explain the persistence of symptoms after the sensory deprivation is terminated. In Hebb's experiments, EEG abnormalities and visual alteration persisted for a short time afterwards. We know that individuals vary in the degree to which they return to full alertness on first awakening. Perhaps the time of change is related to the duration of the prior sleep or hypnagogic period. There may be an analogy in some instances of animal hibernation where the longer the preceding "sleep" the greater the arousal period(15).

Further researches might concentrate on the "input disorder" subsumed under the heading of sensory deprivation, at a more central level—perhaps at that point where sensory stimuli related to the human element, to symbolic representation, are registered and differentiated. At least the peripheral emphasis suggested by the term sensory deprivation appears to be inadequate to explain some, if not all, of the symptoms produced.

Summary

In our study we made 4 major observations.

1. The mental symptoms of patients whose eyes were patched bilaterally were found in a higher incidence than hitherto reported, particularly in patients with detachment of the retina.

2. We identified a new symptom—noncompliance to instructions.

3. Non-compliance occurred most frequently in our patients during sleep or on

awakening, as did also pseudo-hallucinations.

4. Surgical complications were greater in those patients undergoing cataract extraction, who developed mental symptoms during the period of bilateral patching of the eyes as compared to those without mental symptoms.

The coincidence of sensory deprivation and hypnagogic or other periods of reduced awareness may contribute to an understanding of the sensory deprivation effects. More work needs to be done. It would seem imperative to ascertain to what extent periods of reduced awareness occur with the daytime symptoms of our sensory deprivation situation and that in other sensory deprivation experiments. The higher mental functions of inhibitory control, discriminative logic, and both vigilance and tenacity of attention are impaired during periods of reduced awareness. The delirioid symptoms which became manifest in our patients who had brain damage in addition to their eye disease are probably also precipitated more readily at times of reduced alertness.

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CONTEMPORARY CONVERSION REACTIONS: A CLINICAL STUDY [1]

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As psychiatric consultants in the medical department of a large general hospital, we have seen a substantial number of patients in whom the primary diagnosis was conversion reaction. In view of the changing concepts of conversion mechanisms, and the suggestion that the pattern of symptomatology changes with the cultural milieu (1), we considered that an analysis of our current experience would be of some general interest. The term "conversion" was coined by Freud(2) in 1894; but, as historians such as Zilboorg(3), Temkin(4), and Osler(5) have noted, present concepts of conversion reactions derive not from Freud or Charcot(6) but from an English surgeon, Sir Benjamin Brodie(7). Brodie, as early as 1837, broadened the Hippocratic conception of hysteria to include arthralgias and other somatic symptoms which have no evident organic basis, and stated that "fear, suggestion, and unconscious simulation are primary factors."

The diagnoses of the patients on whom we report were made as indicated by the current Diagnostic and Statistical Manual, *i.e.*, classifying by "the immediate condition which led" to consultation and the predominant clinical findings on psychiatric examination. In all cases, the patient's chief complaint consisted of at least one relatively prominent somatic symptom for which there was no apparent anatomical or physiological basis, and for which, on psychiatric examination, there was evidence that the symptom was psychologically or emotionally derived. Criteria in support of a positive psychiatric diagnosis included the temporal correlation of the onset or exacerbation of the symptom with emotionally significant events, the patient's attitudes about the symptom and apparent use of it, and the history of presumed earlier conversion symptoms and polysurgery. In the absence of structural or physiological disorder, and with corroborative findings on psychiatric examination, we regarded a somatic symptom as the result of "conversion," *i.e.*, the unconscious process in which the patient's actual problem or dysphoric affect is symbolically "converted" into a somatic symptom. We therefore have a broader operational model of the term "conversion reaction" than the restricted classical one of "loss of function," although we did carefully exclude psychophysiological disorders, dissociative reactions, overt depressive reactions, and diffuse and vague hypochondriacal syndromes from our series of patients.

The raw data for this report are the records of 134 consecutive patients diagnosed as conversion reactions when seen in consultation by 2 of the authors at the Johns Hopkins Hospital during the last 4 years. They included both inpatients and outpatients, from both ward and private services. The mean age of this entire series was 39.5 years, with a standard deviation of 13.1 years and a range of from 14 to 67 years. One hundred and ten (82%), of the patients were females and 24 (18%), were males; by comparison, in our total consultation experience, about 40% of our patients were males. This percentage of male conversion reaction patients approximates earlier reports(8), but is at variance with the report of Robins, Purtell and Cohen (9, 10), who concluded that conversion reactions do not occur in men except in a compensation setting. Compensation factors were only apparent in 4 of our 24 male patients; in the remaining 20 male patients the conversion syndromes and processes seemed to bear no essential dissimilarity from those of the females in our series.

CLINICAL ASPECTS

At a descriptive level, we first must consider those aspects of conversion reactions

[1] Read (in part) at the 115th annual meeting of the American Psychiatric Association, Philadelphia, Pa., Apr. 27-May 1, 1959.

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associated with the restricted classical formulation of conversion hysteria as "loss of function" (sensory and/or motor), and the equally classical "hystero-epilepsy" (Charcot's(6) "major hysteria"). The following patients exemplify these clinical aspects.

Case 1.—As an example of the classical "loss of function" syndrome, a 34-year-old woman had been brought to the hospital with quadriplegia and anesthesia from the neck down, of several hours duration. A tracheotomy was performed in the accident room (without anesthesia, since her sensory level was above that of the tracheotomy incision) because of the intern's impression that she had a rapidly ascending paralysis with imminent involvement of the respiratory center. By the next day, her symptoms had essentially disappeared.

Case 2.—As an illustration of Charcot's "grand hysteria" or "hystero-epilepsy," a 32-year-old, single man had a one year history of episodic and frequent attacks of breathing difficulty, which were accompanied by clonic pelvic thrusting movements. These attacks began almost immediately after he discovered that his mistress had another paramour. In the attacks, he would exhale forcibly, appearing to have the wind knocked out of him, following which the pelvic thrusting movements would begin.

The next clinical aspect of conversion symptoms which we wish to describe is that of simulation of symptoms of known organic disease patterns. The quality of the simulation varys a great deal and, in the following case, was done with relative expertness.

Case 3.—A 40-year-old housewife was seen on the semi-private medical service. During an episode of weakness, paraplegia and ptosis five years prior to this, it was found in another hospital that she responded to prostigmine, and myasthenia gravis was diagnosed. Weakness had continued and she spent most of the next two years in bed. She applied to an internist (whose research in myasthenia gravis was well known) for further evaluation and was then admitted, having been on prostigmine for five years. She complained of generalized weakness and ptosis, and specifically of weakness in one leg. It was found that she did not have myasthenia gravis currently, and it was considered that the diagnosis had been erroneously made in the past, although the possibility that she was "in remission" could not be totally excluded.

It was learned that her early life had been very traumatic, unstable, and confusing (as an infant, she was given to an aunt to raise), and she had always relied chiefly on cuteness and histrionics to get along with others. She had been hospitalized briefly for a psychotic episode following one of her pregnancies. She was concerned that she did not look her best "for" the consultant when first seen. She declined psychiatric treatment and, at her request, was discharged by the internist on low doses of Mestinon. Three years later, she contacted the psychiatric consultant again, stated that she was still doing well with her physical symptoms but was still taking Mestinon. She complained that she was getting "too bitchy and impossible at home," and requested treatment for her temper tantrums. She was referred to a private practicing female member of the staff, whom she contacted but at the moment does not feel she can afford to work with.

Reconstructing her history, her initial concepts of myasthenia gravis seemingly evolved during her contacts with the physician who first diagnosed it and, in a sense, the symptoms could be considered iatrogenic. An unusually "other-directed" person, she, we feel, responded to his interest in the possibility of a "fascinating" disease, and thus symptomatology was shaped by history taking. As the clinical syndrome emerged from these negotiations, the physician gained a fascinating patient, while the patient gained a fascinated physician.

Next, we wish to give a clinical example of a pain syndrome that we consider to have been a conversion reaction. The importance of this aspect of symptomatology is reflected in the fact that pain was the primary complaint in 75 of our 134 patients.

Case 4.—A 60-year-old scrap weigher for a large corporation was seen in consultation because of complaints of abdominal pains of 9 months duration. Extensive diagnostic workup elicited no organic or psychophysiological abnormalities. A childless man who had lived in a rented home for years and whose chief interest had been in fixing it up, his abdominal pains began after the owner of the house had died, at which time he and his wife became very concerned about having to move and losing their investment in the improvements they had made. He also felt that his job was threatened at that time, and, in addition, a relative had just died. Clinically, he showed minimal signs of depression consisting of slight

weight loss and some insomnia, both of which he attributed to "the pain." He declined psychiatric outpatient treatment, feeling that his illness just was not diagnosable. One month later, he was seen in an affiliated hospital after he had made an apparent suicidal attempt by inflicting 30 to 40 slashes on his abdomen, arms, and legs. Following surgical treatment, he continued to complain of pain, was increasingly agitated, and was finally transferred to a state psychiatric hospital.

The last clinical aspect to which we call attention is that the clinical picture is sometimes mixed. That is to say, there may also be symptoms related to underlying physiological or structural abnormalities in addition to the predominating conversion reaction. An example of this was a 29-year-old, married woman with structural disease of the nose and throat, psychophysiological symptoms compatible with anorexia nervosa, frequent overt anxiety and hyperventilation, and conversion facial pain.

DISCUSSION

From the vantage point of current medical knowledge, the classical symptoms of "loss of function" or "hystero-epilepsy" seem relatively primitive, transparent, and easy to diagnose (although the relativity of this observation is illustrated in *Case 1*, the anesthetic patient who was dramatically misdiagnosed by a medical intern but not by the resident). In our experience, these patients are apt to come from comparatively backward rural areas, where there is greater cultural acceptance of these symptoms. Patients illustrating the "classical" aspects of conversion symptomatology do, in a sense, simulate organic disease processes as they conceive them, but in a relatively crude manner commensurate with their lack of medical sophistication. At the other end of this spectrum, we observed patients from sub-cultures in which medical education and sophistication were highly developed and who expertly simulated complicated disease entities; *e.g.*, our series included 2 physicians, 2 nurses, and 2 neurologists' secretaries (one of whom simulated multiple sclerosis, while the other simulated symptoms associated with a cyst of the third ventricle). The existence of patients who are "expert simulators" is vivid evidence that conversion symptoms conform to the patient's imageries or ideas about a suspected disease. In many ways, the span between the "backward" and "sophisticated" sub-cultures of today is analogous to the time span in the evolution of medical knowledge between the late 19th century and the mid-20th century; we postulate that the difference between the conversion reactions of that day and this is comparable to the observed differences between our patients of contrasting sub-cultures. We conclude that conversion reactions are molded by unconscious simulation of disease entities, and that symptom patterns change with changing medical knowledge of the patient and of his cultural milieu. The acceptability of the patient as a sick person hinges on lack of gross discrepancy between his symptoms and the prevalent medical concepts of his society. No sharp division between "classical, primitive" and "expert simulation" patterns can be made, and it would be meaningless, therefore, to use these concepts as mutually exclusive categories, with so many patients in each.

It is of special interest that, at the turn of the century, Möbius(11) stressed the concept that hysterical symptoms were determined by the patient's ideas about disease, and Babinski(12) elaborated the concept of simulation of disease (which he called "pithiatism" to embody the notions of "aping" or imitating, and of suggestibility). Babinski also stressed the influence of history-taking upon the symptomatology. Similarly, we found that, in medically sophisticated patients, the imageries of the patient and those of the physician about a suspected disease were not widely divergent, and, in fact, often tended to converge more during the process of clinical investigation. To other patients with less medical knowledge initially, the physician sometimes communicated his conception of and interest in a suspected disease during the early "disorganized" phase of illness described by Balint(13), thus iatrogenically shaping symptoms. Differential diagnosis is sometimes a problem in our day as it was in Sydenham's(14), who said: "Hysteria imitates almost every disease which befalls mankind. Whatever part of the body it attacks, it will create the proper symptom

of that part. Hence, without skill and sagacity the physician will be deceived."

As we previously noted, the type of symptom with which our patients most often simulated known disease entities was that of pain. Our findings, then, are similar to those of Purtell, Robins and Cohen(15), who found that pain was the conversion symptom most often clinically encountered. Although pain was not mentioned as a symptom of hysteria by Charcot(6) and Janet(16), we feel that our clinical data support the inference that pain is often the somatic representation of an affect. Fenichel(17), Engel(18) and Szasz(19) have described important aspects of the psychological significance of this symptom. We do feel that perhaps there is some qualitative difference between the pain syndromes and other conversion reactions, in that the pain syndromes represent disguised, but nevertheless verbalized appeals for help, in sharp contrast to the relatively unverbalized appeal implicit in "loss of function" syndromes in which the symptoms speak for themselves.

Another important factor in shaping symptoms, in addition to the closely interrelated ones of identification and simulation, is that of the symbolic transmutation of specific unconscious conflicts and affects. The patient's final choice among available identification models and illnesses to simulate, we feel, is partially determined by the symbolic requirements of the particular conflicts and affects with which he is coping. The symbolic meaning of many of the symptoms in our clinical illustrations was apparent; for example, in a patient with simulated multiple sclerosis, the intolerable restrictions implicit in an unwanted pregnancy were represented by feelings of shackles around her ankles, while the weakness of her arms precluded holding a baby. The importance of distinguishing between "meaning" and "cause" of symptoms has been emphasized by Whitehorn(20). It hardly seems necessary to elaborate further on the importance of the symbolic meaning of symptoms, especially since this aspect of conversion reactions has received so much attention in recent years.

ASSOCIATED PSYCHOPATHOLOGY

Depressive features were present, although overshadowed by conversion symptoms, in 40 of our 134 patients. In many more patients, a history of antecedent separation experience led us to infer the presence of underlying depressive affect, effectively masked by the conversion symptoms. We also found, as perhaps would be expected, that the 40 patients with associated depressive features were not distributed at random throughout our population of conversion reactions, but were shifted upwards in age to a highly significant degree ($p < .0001$), with a mean of 46.9 years and a standard deviation of 11.8 years (compared to a mean of 36.4 years and a standard deviation of 12.3 years for the remainder of the series). The pain syndromes tended to be associated with those patients having some evidence of depression. It was our impression that the pain was often more severe in the older patients, partially or completely masking signs of depressive illness; in these cases, suicidal risk was often considerable.

Pursuing further the relationship between conversion symptoms (especially pain) and depression, we reviewed 100 unselected cases with the primary diagnosis of depressive reaction, who had been seen in the same setting by the same 2 authors. In this group, we found that prominent conversion features had been noted in 28 patients (*i.e.*, conversion symptoms were present, but were overshadowed by overt clinical depression), and, in these depressed patients, the conversion features almost invariably included pain. The mean age of this group of 100 primarily depressed patients was 46.5 years, with a standard deviation of 12.1 years, which closely approximates the corresponding statistics of the depressive sub-group of conversion patients.

In a study by one of the authors(21) of patients with a history of acute brucellosis, the development of a chronic syndrome, so called "chronic brucellosis," was positively correlated with the concomitant presence of potentially depressing life situations. Most of the chronically symptomatic patients denied emotional problems and considered whatever depression they expe-

rienced as secondary to symptoms such as fatigue and somatic pain, which were attributed to an allegedly persistent infection with brucella. There was strongly suggestive evidence that this preoccupation with somatic symptoms had a self-esteem supporting function.

Conversion reactions, then, may be used as defenses against more overt depression, which may thereby be obscured. Even when depression predominates, however, conversion reactions may still be defensively employed.

We further noted clinical evidence strongly suggestive of an underlying or incipient schizophrenic process in 19 of the 134 patients. The mean age of 32.7 years, with a standard deviation of 9.8 years, is significantly lower ($p < .01$) than that of the remainder of the group (the mean of which was 40.7 years, with a standard deviation of 13.2 years), and lower than that of the depressive sub-group to an extremely significant degree ($p < .0001$). The delineation of these 2 sub-groups of conversion reaction patients reminds us of the theoretical constructions of Fairbairn (22), which postulate a "depressive" or "schizoid" substratum to neurotic and characterological symptomatology.

A significant number of our patients were adolescents. The occurrence of conversion symptoms in childhood(23) and in adolescence(24) has been discussed by others, and conversion hysteria was formerly considered a disease with onset in adolescence. Only 2 of our adolescents had evidence of schizophrenic tendencies, and only one had clinical evidence of depression. In all of our adolescents, we were impressed with problems of shifting roles and of identifications with conflicting groups ("identity diffusion" as described by Erikson(25)), resulting in interpersonal difficulties involving dependency and sexual issues. We felt, then, that the adolescent group of patients presented more or less distinctive and unique underlying psychodynamic problems when compared to the remainder of the series; we suspect, however, that as these patients grow older, their failure to settle into stable, ego-satisfying interpersonal roles may result in a propensity for anxiety and depression, which in turn might be defended against with conversion symptomatology.

Not all of our 134 patients were accounted for by the 3 groups just discussed. In a large number of our remaining patients, the standard formulation of conversion as a defense against potential neurotic anxiety seemed to apply. There was, in fact, clinical evidence that the situations in which these patients found themselves were ones which might ordinarily engender neurotic anxiety, and that the anxiety was circumvented by the defensive use of conversion symptoms. In the consultation situation, the inference of masked anxiety, masked depression, and masked incipient schizophrenia could only be made from case to case with varying degrees of precision, so that we did not attempt to delineate these groups statistically. Our data are compatible with the view point that conversion reactions are used as ego defenses in at least 4 different situations: those of adolescent ego-identity difficulties, depressive affect, incipient schizophrenic disorganization, and neurotic anxiety. It is entirely possible, of course, that these 4 categories do not complete the list of situations and psychopathology associated with conversion reactions.

Phenomenologically, conversion reactions in general enable the patient to avoid or reduce affective distress by substituting fantasy-endowed and symbolically expressive somatic distress or dysfunction. In this way, an intolerable affective problem may apparently be "converted" into a face-saving physical-medical one, in which the patient shifts the responsibility for remedial action from himself to others, including the physician. The ensuing "secondary gains" (which Laughlin(26) terms "epigain") then often become a perpetuating factor. Parenthetically, we should add that we have also observed the substitution of fantasied neurotic distress for real somatic distress in occasional patients who deny catastrophic illness (*i.e.*, malignancy) by attributing their ill health to emotional problems; this process, in a sense, is the inverse of the conversion reaction process.

PERSONALITY AND DEVELOPMENTAL CONSIDERATIONS

Less than one-half of our conversion patients were so called "hysterical char-

acters," and we therefore agree with Chodoff and Lyons(27) and with opinions expressed in the recent panel discussion of the American Psychoanalytic Association meeting(28) that this personality pattern is not a prerequisite for the conversion process. In spite of efforts(27, 29) to delineate clinically the "hysterical personality," this term connoted such a scattered constellation of personality traits that it does not seem suitable to nosological use. In its non-professional usage, the word "hysteria" itself ordinarily denotes "emotional incontinence"(30), and probably we should graciously relinquish the term to the laity altogether. We concur with Erik Erikson (31) and with Henderson and Gillespie (32) that histrionic traits are at the core of the so called "hysterical personality"; and we therefore suggest that the term "histrionic personality" would be distinctly preferable by virtue of being relatively specific and meaningful. Whitehorn (30, 33) has suggested that, while all human beings may be conceived of as playing roles, the histrionic personality does so in an unconvincing way which calls attention to his role playing; it is as if the role just does not quite fit and "shows" in the manner that a woman's slip "shows." In the histrionic personality, the role playing shifts and varies conspicuously with cues from the audience of the moment, indicating an inability to maintain stable personal and social identities; Akerman(34) has described various aspects of this phenomenon. This sensitivity to cues as reflected in shifting roles underlies the so called suggestibility of these people, and is of crucial importance in the doctor-patient relationship, as described above.

Immaturity and dependency are often ascribed to patients with conversion reactions and histrionic personalities. One tangible issue developmentally related to immaturity and dependency is that of ordinal position in the family. Ordinal position was one aspect of development recently studied by Sears, Macoby and Levin(35) and some of the implications of sibling position have been discussed by Montagu(36), Wahl(37), and others. Ljungberg(38) investigated sibling position in patients with "hysterical conversion" symptoms in Sweden (because Kraepelin in 1915 had quoted Aschaffenburg, who had asserted that hysterical patients were often *Spätlinge*), and found no correlation. We had been impressed with the frequency of the story that the patient was the "baby girl" or the "baby boy" or just "the baby" of the family. We hypothesized that patients with conversion reactions were significantly often the youngest, or the youngest of their sex in the family. We investigated the sibling position in a group of 100 consecutive patients belonging to the present series of conversion reactions. The hypothesis that patients with conversion reactions had been the youngest child in their families more frequently than if chance alone were operating was confirmed within the $.05 < p < .01$ level (p was approximately equal to .045). The hypothesis that patients with conversion reactions had been the youngest of their sex in their families more frequently than if chance alone were operating was also confirmed within the same range; in this case, "p" was calculated to be approximately .015. In both instances, approximately 35% more patients were in the hypothesized position than would have been predicted by chance.[3]

We found, then, that the frequency of these ordinal positions was significantly elevated in our series of conversion reaction patients. We do not, at this time, have

[3] The authors are indebted to Dr. John W. Shaffer, Dr. Daniel Wilner and Professor Jerome Cornfield, of the Johns Hopkins University Schools of Medicine and of Hygiene and Public Health, for statistical advice and criticism. Dr. Wilner specifically suggested the method for computing the number of patients expected by chance to be in the last position of each different sibling size group. Professor Cornfield suggested the method for computing X^2 for each hypothesis by the following formula:

$$X^2 = \frac{\left[\sum \frac{n_i\, i^2}{i-1}\left(p_i - \frac{1}{i}\right)\right]^2}{\sum \frac{n_i\, i^2}{i-1}} \qquad \frac{\left[\sum \left(\frac{r_i - n_i}{i}\right)\left(\frac{i^2}{i-1}\right)\right]^2}{\sum \left(\frac{i^2}{i-1}\right)\left(n_i\right)}$$

where "i" equals the number of children (or of children the same sex as the patient for the second hypothesis) in each family group, "ri" equals the number of patients observed in the last position for each given "i,"

and "ni" equals the number of patients who were from family groups of each "i."

comparable data on other categories of patients we see in consultation. In many individual conversion reaction patients, other "special role" positions seemed to play a part in the genesis of predisposition. A number of our patients had been the oldest of their sex, and often had been singled out by the parent of the opposite sex as their particular favorite. For example, one patient, the sixth of 11 children but the oldest of 3 girls, remarked that "of course," she was "daddy's favorite after all those boys." If they were in other family positions, circumstances would often create a special role. One middle sister whose mother had died when she was 13, and whose older sister had already left the home, became the "lady of the house" and had very complicated feelings about her relationship with her father.

From these data and observations, we are inclined to wonder if, in our culture, certain special developmental family roles correlate with later difficulty in assuming and maintaining mature social roles. In passing we might speculate about various possible versions of role enactment problems in our 4 sub-groups of conversion reaction patients. The neurotic anxiety sub-group may be thought of as fearing retribution for assuming a particular role. The sub-group with underlying depression may be attempting to cope with failure or disruption of an established pattern of role enactment. The shifting roles and allegiances of the adolescent sub-group reflect their identity problems, and the latently schizophrenic sub-group may be manifesting a rather stubbornly negativistic reaction against being pressured into an expected role(30). The gap between our data on ordinal role and possible later aspects of social and personal role difficulties points to the need for further investigation in this area.

THERAPEUTIC CONSIDERATIONS

Although the psychiatric consultations were often useful to the internists as part of their diagnostic appraisal of patients, we are unable, nevertheless, to report impressive therapeutic success with our group. The "refractoriness to psychotherapy" noted by Brown and Pisetsky(39) usually took the form, in our patients, of continued insistence that their problems were physical and not emotional or psychological. A surprisingly bright farm wife chided the consultant that her back pain was "immotional and not emotional." Any obvious anxiety or depression was rationalized by the patients as secondary to alleged organic disease, and most refused psychotherapy even on a tentative trial basis. Because of this relative invulnerability of the conversion defenses, collaborative efforts to shift the medical investigation to psychiatric treatment often resulted in the patients seeking help elsewhere. This fact, we think, sometimes becomes apparent to internists and other physicians, who may then stop referring this type of patient. For these reasons, psychiatrists engaged in liaison work in medical departments, where patients are intensively studied, have a relatively greater opportunity to see and study these patients than do psychiatrists otherwise situated.[4]

Occasionally we were able to avoid a direct clash with the patient's somatic defense by using a somewhat oblique approach. Those few patients who did elect psychiatric treatment, especially psychiatric hospital treatment, did relatively well. Ideally, we think a larger proportion of conversion reaction patients could be persuaded to enter, and could be improved in, convalescent wards in general hospitals, where the somatic defenses would not necessarily be challenged so abruptly that the patient leaves treatment. In such a therapeutic milieu, the obvious presence of convalescent medical and surgical patients becoming rapidly re-interested in non-somatic matters could, we expect, exert strong social pressures toward improved functioning and symptom remission. In this setting, those patients who are potentially able to use individual psychotherapy could gradually be helped to discover this fact.

[4] In this connection, the present series of conversion reaction patients constituted 13% of the consultative experience of the two authors concerned, whereas, in contrast, the Outpatient Department of the Henry Phipps Psychiatric Clinic of the Johns Hopkins Hospital reported that only 3% of the patients "terminated" during the year ending June 30, 1958 were diagnosed as conversion reactions.

SUMMARY

1. Our operational criteria for the diagnosis of conversion reactions are discussed, and an analysis of a series of 134 consecutive patients so diagnosed is presented.

2. From our contemporary point of view, 4 clinical aspects of the conversion reaction phenomenon are discussed and illustrated. These clinical aspects are: a) "classical" symptom patterns of "loss of function" and "hystero-epilepsy," b) simulation of known organic disease entities with varying degrees of expertness, c) symptom patterns in which bodily pain is a predominant feature, and d) symptom aggregates in which conversion symptoms are intermingled with those of an organic and/or psychophysiological nature.

3. In addition to patients evidencing the well-known relationship between conversion mechanisms and neurotic anxiety, in our conversion series there was a group of 40 patients with clinically evident features of depression, a group of 19 patients with clinical features of incipient schizophrenia, and a group of adolescents with characteristic ego identity problems. These subgroups were not randomly distributed within the parent group, but had significantly different parameters. We conclude that conversion reactions serve to reduce or avoid less tolerable depression, neurotic anxiety, the threat of psychotic disorganization, and the painful affects associated with adolescent ego identity problems.

4. Less than one-half of our conversion patients could be considered so call "hysterical personalities." We prefer the term "histrionic personality" to "hysterical personality," since the former calls attention to the essential characterological feature, *i.e.*, a propensity for transparent dramatization.

5. It was found that a significantly greater proportion of our patients had occupied the position of the youngest child, or the youngest child of one sex in the family than would have been expected by chance alone. It is postulated that these and other "special person" relationships within the family group in early life may lead to difficulties in role stabilization in later life.

6. The majority of our patients regarded themselves as organically ill and a direct recommendation of psychotherapy was usually rejected. A more oblique therapeutic approach was sometimes effective. The potential therapeutic usefulness of a convalescent ward in a general hospital is suggested.

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DISCUSSION

MARGARET C. L. GILDEA, M.D. (St. Louis, Mo.).—This paper presents a number of interesting points for discussion. It has always impressed me that a hysterical symptomatology is a superficial manifestation, one variety of "acting out," and practically always is covering some much more fundamental disorder. These authors make a good case for the basic dichotomy of personality, similar to formulations made by many different psychiatric philosophers including Jung, who separated sheep from goats, extroverts from introverts. Here Fairbairn is quoted as postulating a dichotomous substrate, depressive or schizoid. Rosenszweig calls these directions in the personality extrojective or introjective.

The first case presented is especially impressive : the patient who showed no apparent depressive tendency on examination even though a suicide attempt had been made. The second attempt was successful. It seems to me that one must postulate depressiveness in a case of that sort even if one doesn't observe it.

The authors formulate four kinds of basic disorders of structure in personality which conversion symptoms may be used to defend against. Depressive and schizoid, adolescent ego problems, and lastly, neurotic anxiety. These are not really so clearly divisible in my mind as the authors make them appear. The neurotic anxiety of course appears in the other categories. The problems of adolescence might be put into a separate category but they also can be considered as based on depressive or schizoid problems.

The term suggested by Whitehorn, the histrionic personality, conveys an immediate sense of the shallow, largely unconscious form of acting-out, that hysterical symptoms betoken. This is similar to the Jungian concept of "persona," which describes the mask the person puts on to fill his role. In this histrionic individual the mask is wearing the person, rather than the person wearing the mask.

Role development, and ordinal family position, are brought out here as relevant. Ten years ago Mr. A. D. Buchmueller and I, in studying public school children in the St. Louis area, observed that symptoms of all sorts, including hysterical, occurred more frequently in youngest and only children. These authors have not included the only children in their analyses; however the same factors, I believe, are at work. Any child who has the *special* relation to the adult has the special burden put on him of responding to the role demand. The intensity and molding power of the role expectation of the parents has an impelling and determining effect on the developing personality structure of the child.

I am particularly interested in the subject of male hysteria, since Dr. Eli Robins is a member of our department. The famous work on hysteria from the Massachusetts General by Purtell, Robins, *et al.*, defines "hysteria" in males as a totally different illness, or symptom complex, from hysteria in females. It is of course different, just as any manifestation of the male is different from an analogous manifestation in the female, but I am quite confident that this condition exists, and am glad to see it demonstrated in quite a large group in this study.

I have certainly seen some in clinical practice. I treated a man 15 years ago with spastic torticollis, and pain in the neck, with a clearly psychogenic basis. Ten years later I saw this man again. The torticollis had cleared up, but he was suffering from conversion symptoms in the abdomen, this time simulating peptic ulcer. Purtell and Robins postulate that there is a compensation factor present in male hysterics which is different from the factor of secondary gain which one practically always can demonstrate in hysterical females. In this particular case the compensation factor and the secondary gain I thought were identical. The symptom helped this man to deal with problems with his wife and business. I believe this is exactly the same motivation of many symptom patterns in women.

I feel that these authors have taken a somewhat too pessimistic view of the treatment potentialities of the hysterical patient. They have apparently had the experience of seeing these patients fresh from medical clinics or medical services. The patient has probably been referred with a statement something like: "Your symptoms are nothing but . . . ". As a matter of fact I have often seen a statement of this sort coming from a referring physician serve to relieve the symptom which had brought the patient in for study. Sometimes another symptom appears; other times the patient may get on for a time with no further symptoms. We should not ignore the fact that this form of "reassurance," (or disparagement of the symptom), sometimes has a curative effect. In my own practice I have found hysterical symptoms were as easy to treat as any of the defense mechanisms which the individual chooses to protect his self-esteem and personality with, and far easier to treat than phobic or obsessive defenses. I do certainly agree with these authors that the treatment of choice for the major hysterics is milieu therapy, combined with group and personal psychotherapy, when possible. I am especially impressed with the value of the therapeutic community to individuals who are crippled with hysterical personality patterns.

THE ACTION OF PSYCHOTOGENS AND A NEUROPHYSIOLOGICAL THEORY OF HALLUCINATION[1]

AMEDEO S. MARRAZZI, M.D.[2]

The use of the psychotogens that are related to the naturally operating cerebral neurohumors, offers real possibility of supplying a rational basis for an experimental psychiatry, whose aim is to reproduce a reasonable semblance of clinical psychosis and study and manipulate it, so as to better understand and cope with naturally occurring psychosis. This is possible through the use of substances such as mescaline and lysergic acid diethylamide (LSD-25), which are capable of producing at will reversible, "chemical psychoses" including hallucination in varying degrees. Such an approach tests the logical assumption that the hallucinatory manifestations exhibited by a variety of naturally occurring psychoses as well as the experimentally induced ones share much in common in the way of neural pathways and mechanisms, despite the fact that the psychoses mentioned are far from one and the same.

Perception is distorted when it fails to match reality. This implies continuous scanning of sensory inputs and comparison with past experience or memory. Thus a mismatch normally would cause the input to be judged unreal, while failure of proper judgment would result in illusion or, when the sensory inflow arises endogenously, in hallucination. A dissociation from reality, therefore, might in fact represent a dissociation between the parts of the brain responsible for handling information. The nature and site of such processes and their disturbances would be expected to play important roles in the nervous system in health and disease. Since hallucination is often a prominent feature in psychosis, an analysis of the hallucinatory mechanism is of vital interest equally to the experimenter and the clinician. Characteristically, such a question begins and, with helpful intermediate steps utilizing other species, ends in man.

The brain can be looked upon as a communication and information handling system. The simplest significant unit in such a system is, therefore, one that can handle the simplest message. In experimental animals this can be conveniently studied and measured by sending in an electrical message and recording electrically the output at the synapse. The characteristics of synaptic function, its distortion and restoration can be discovered and understood by experimentally changing the chemical environment of the synapse. A suitable simple pathway that we have utilized extensively in working with animal counterparts of the actions of psychotogens has been the transcallosal pathway connecting symmetrical points in association areas of the optic cortices of the two halves of the cat's brain(1), Fig. 1. On initiating a test impulse (electrically) in one optic cortex, the output message from the terminal synapses in the contralateral cortex is recorded by a surface electrode. By introducing the chemicals that act as tools in analyzing brain function, directly into the blood supply to the brain through the common carotid artery, we succeed in achieving an effective concentration in the cerebral hemisphere on the same, injected side with almost no other complicating effects, since dilution in the general blood stream lowers the drug concentration to a level that is inadequate for actions elsewhere. In this way we have shown in the cat brain, that serotonin(2), adrenaline and noradrenaline(1) are neurohumoral inhibitors at cerebral synapses and that mescaline, LSD-25, and bufotenine which are chemically related to these cerebral inhibitory neurohumors, have the same kind of cerebral synaptic inhibitory action(3, 4). This has led us to the theory that a disturbance of the equilibrium between neurohumoral inhibitors and excitors causes cerebral dysfunction and that the chemical psychotogens, mescaline, LSD-25, and buf-

[1] Read at the 115th annual meeting of The American Psychiatric Association, Philadelphia, Pa., Apr. 27-May 1, 1959.

[2] Director, VA Research Laboratories in Neuropsychiatry, Pittsburgh, Pa.

otenine, by adding to the inhibitory influences created just this kind of distortion of the synaptic chemical environment with consequent dysfunction manifested by symptoms characteristic of psychosis.

The pertinence of these findings to clinical psychosis is attested to by the fact that the clinically effective tranquilizers, as would be logically predicted, prevent the synaptic impediment produced by psychotogens in our experimental animals(4, 5, 6).

The question now becomes: how does excessive or abnormal cerebral synaptic inhibition account for mental disturbance and specifically for hallucination? However, before proceeding with this, we must compare our data with a reported synaptic exciting action of LSD-25(7). Upon whether we can reconcile such apparently contradictory data depends whether we may consider a unitary or a dual hypothesis to supply a mechanism for hallucination.

This requires the further inquiry into the possibilities of relating units into meaningful neurophysiological patterns, whose perversion by psychotogens and restoration by tranquilizers suggests that they are the basis of the behavioral patterns that have become abnormal. In the visual system, as in the other sensory modalities, the inflow after passing through a subcortical relay station (here the lateral geniculate) divides into a main stream passing on as a main inflow to the primary cortical receiving areas and another stream through diffuse projections to association areas such as the ones interconnected by the transcallosal pathway described above. This is schematized in Fig. 2. It is the integration of the primary afferent inflow with the feed back from the signals simultaneously received in the reference or association areas that results in the ultimate perception of the environment and its stimuli.

It is possible by appropriate placement of stimulating and recording electrodes to study and compare the two kinds of areas primary and reference, or association which have already been distinguished histologically(8) by the richness of the dendritic type synapses (D 1, Fig. 2) in the association and the somatic (S_2) in the primary receiving areas. Fig. 3 shows that indeed in our hands(9), as well as reported elsewhere (7), chemicals can appear to have different actions on the two sites, so that synaptic inhibition in the reference areas may be accompanied by enhancement in the primary pathway. This last is illustrated when stimulating the optic radiations and recording from the primary receiving cortex. This curious pairing of inhibition in the reference and enhancement in the primary areas is found with moderate doses of all the synaptic inhibitors we have mentioned, including the neurohumors and the psychotogens. However, it is not an inevitable relation between chemical effects on the two areas, since anesthesia in the form of pentobarbital depresses both areas in a parallel fashion.

Further pursuit of the question has presented us with both the answer and a concrete set of examples of the mechanisms we believe responsible for the kinds of mental disturbance represented by chemical psychosis and for certain group of hallucinatory phenomena. By simultaneously activating with test impulses the visual primary and reference system and recording the electrical responses from the appropriate cortical sites, we have analyzed the manner of action of LSD-25, Fig. 3, and the influence upon it of the interruption of a pathway carrying impulses from the cortex restraining the subcortical relay through which the visual inflow must pass. The interruption is accomplished by a lesion in the lateral geniculate which is the subcortical relay.

The left hand panel of the typical data presented in Fig 3 shows that for LSD-25, inhibition in the transcallosal is accompanied by increase in potentials (downwards instead of upwards because of special recording conditions) in the primary or radiation system. After the lesion the results in the right hand panel show that the transcallosal system remained unaltered but LSD-25 now inhibits also in the primary system.

The conversion from apparent enhancement to inhibition in the primary system reveals that the true nature of the synaptic action of this group of psychotogens is actually inhibition, in this instance of the cortico-geniculate restraining pathway thereby releasing the subcortical relay and facili-

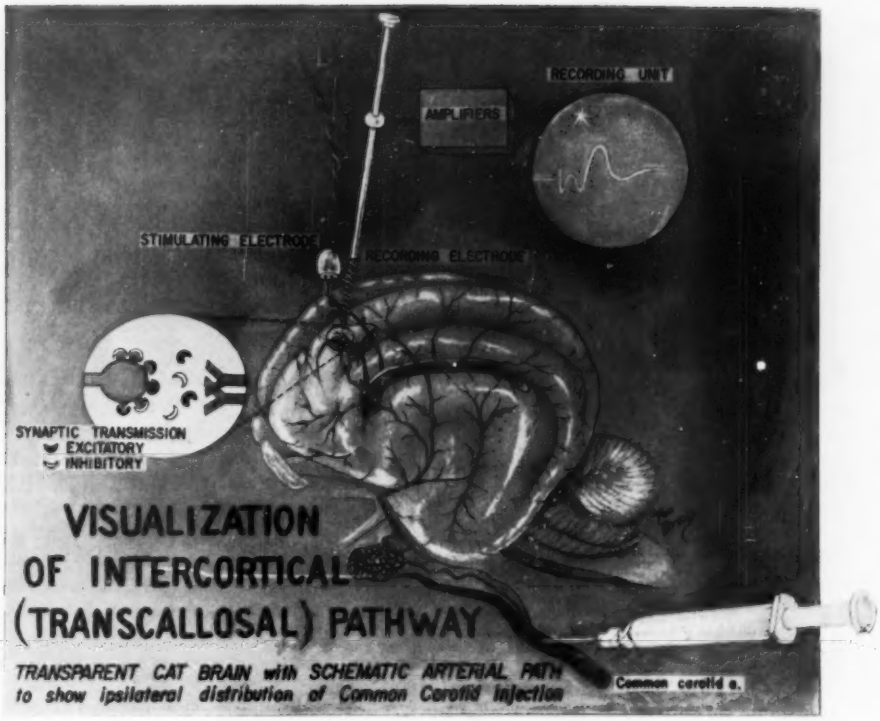
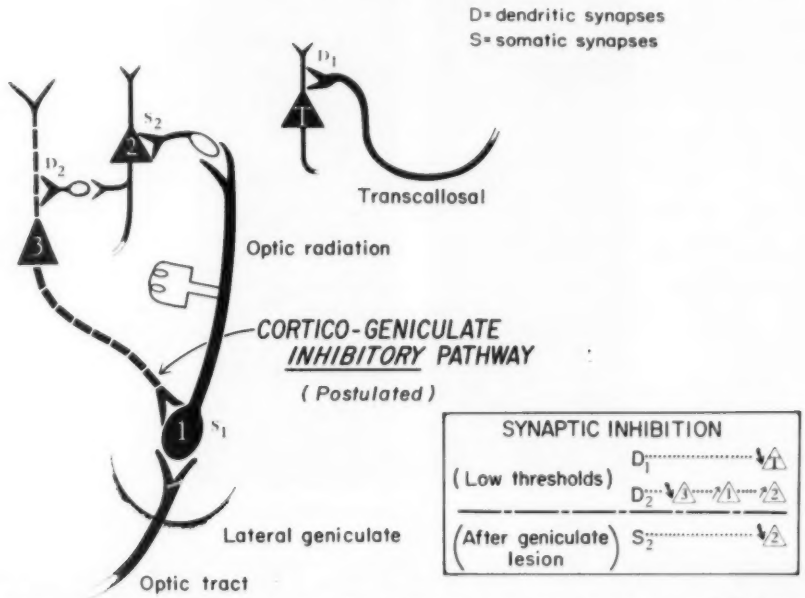
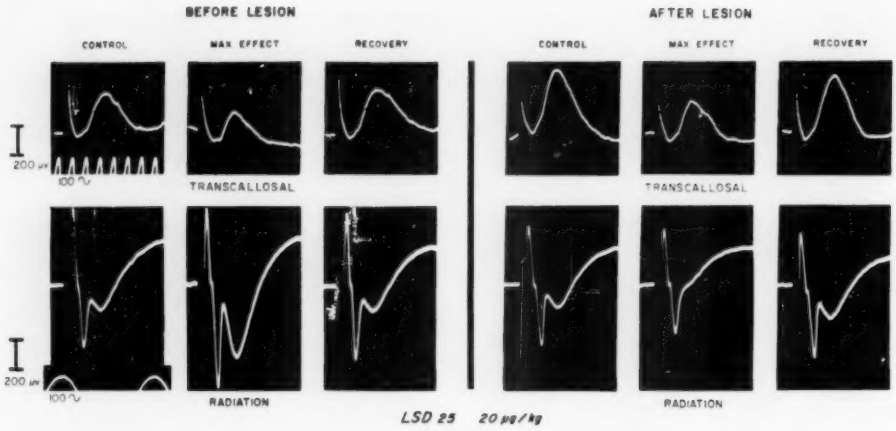


FIG. 1



SCHEMATIC PATHWAYS TO ILLUSTRATE RELEASE PHENOMENON FROM DENDRITIC SYNAPTIC INHIBITION IN OPTIC SYSTEM •••

FIG. 2

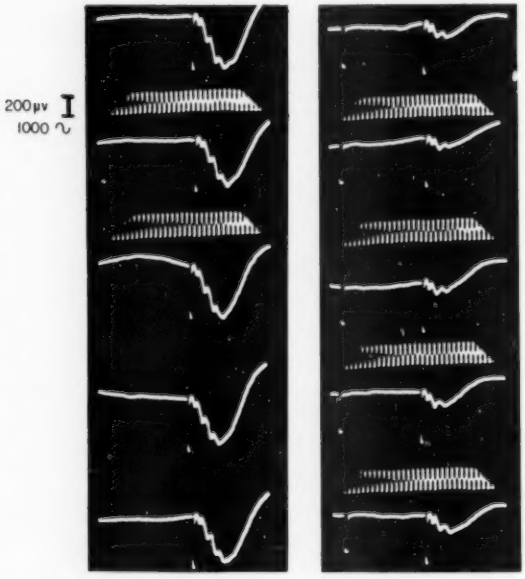


REVERSAL OF CHEMICAL EFFECTS IN GENICULO-CORTICAL SYSTEM BY LATERAL GENICULATE DESTRUCTION

CORTICAL POTENTIALS EVOKED ALTERNATELY EVERY 2 SECONDS THROUGH TRANSCALLOSAL & OPTIC RADIATION FIBERS

Ipsilateral Common Carotid Artery Injections in Pentobarbitalized Cats

FIG. 3



INHIBITORY EFFECT OF CORTICO-FUGAL "OPTIC RADIATION" TRAIN

CORTICAL POTENTIALS EVOKED THROUGH OPTIC TRACT

250 m.sec. TRAIN 100/sec. PENTOBARBITALIZED CATS

FIG. 4

tating its output. The latter kind of action can be quite readily demonstrated by other means. Thus interrupting the pathway at its cortical origin by freezing, results in a marked enhancement. By this and by direct stimulation of the feed back pathway from cortex to subcortex, its postulated inhibitory nature has been confirmed, Fig. 4.

We therefore appear entitled to a unitary view which says two important things relevant to possible mechanisms of hallucination. It says that the primary synaptic effects of psychotogens, exogenous or endogenous, related to LSD-25 are inhibition, which may, because of special pathways inhibited, present itself as a release phenomena, and that the threshold for dendritic synapses is lower. Therefore the initial action in the visual pathways is inhibition in the association or reference areas and in the dendritic synapses constituting a smaller fraction of the primary receiving area and assumed to control the feed back quenching pathway originating here and terminating in the subcortical relay.

Comment

Restated, the findings indicate in specific ways how synaptic inhibition can constitute a mechanism of hallucination by virtue of a two-fold effect. One is the release from cortical restraint, which is a familiar manifestation of incomplete anesthesia, and for which we now provide a specific pathway in the visual system. The other and probably the considerably more important effect is the differential inhibition of dendritic over somatic synapses, which, in addition to bringing about the release phenomenon, tends to impede communication with the reference areas, whose synapses are chiefly dendritic, and wherein, to the best of our present knowledge, resides the record of our experiences and our previous judgments. Diminished ability to scan these in order to evaluate present experience and place it in the framework of reality, would thereby lead to illusory and hallucinatory percepts.

It seems to us that illusion and hallucination are the same kind of aberrant reaction to stimuli, the former being to an identified stimulus in the external environment and the latter to an often unidentified stimulus either in the external environment or in the internal one perhaps in the form of impulses that are more or less continuously circulating in the nervous system at subconscious levels. Our neurophysiological interpretation leads to the concept that hallucination and illusion thresholds are closely related, and that measuring the latter, and the influence upon it of subclinical, *i.e.*, not frankly hallucinatory, doses of psychotogens, can serve as an index of hallucinatory susceptibility.

The extent to which this neurophysiological concept of hallucination operates in psychoses, chemically induced or naturally occurring, and in neurological patients with deficits in the visual association areas is being tested by determining the responses to a number of measurable, experimental illusions of graded complexity and to the Rorschach test, as well as their modification by chemical psychotogens—in the case of endogenous disease—and by the tranquilizers. Analogous experiments will be carried out in behavioral studies of experimental animals. It is expected in this way to develop data that will critically test the hypothesis, which stated in its simplest terms, says that the form of dissociation from reality known as hallucination may sometimes result from an actual dissociation of primary visual inflow from its association areas whose operation could have made possible a check with other cues and especially with remembered, visual reality.

It should be pointed out that the proposed mechanism is conceived of as a neurophysiological basis for visual dissociation from reality or hallucination, but not necessarily the only one. On the other hand, since the psychotogenic actions are not unique to the optic system, the concept has applicability and plausability in other cerebral systems as well.

A conceptual framework for organizing our knowledge of the entity, psychosis, and its manifestations serves a variety of important functions. Not the least of these is the continuous ready testing it affords of the matchings and analogies or deficits and inconsistencies from case to case and symptom to symptom in natural and experimentally induced psychoses. A concept of distorted performance must arise from

fitting together of pieces of information on altered behavior and its underlying functional and structural components into a possible mechanism or origin. The very framing or stating of a proposed mechanism, ipso facto, calls for the testing of its adequacy to fit the concept and one very significant means of so doing is to attempt the therapeutic modification it suggests. The criteria for satisfying this are of vital interest equally to the experimenter and the clinician because they are the criteria for evaluating improvement of the patients.

The proposed technique, of measuring the effects of small doses of psychotogens, devoid of overt symptomatology, upon illusion thresholds offers promising possibilities in screening groups for individuals of low hallucination thresholds, who might profit by preventive treatment, and in determining psychotic status and its response to therapy.

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PHYSICIANS AS PSYCHIATRIC PATIENTS: PRIVATE PRACTICE EXPERIENCE [1]

MANUEL M. PEARSON, M.D.,[2] AND EDWARD A. STRECKER, M.D.[3]

INTRODUCTION

A certain amount of interest has been raised in the subject of doctors as patients. Are they prone to certain illnesses? What conclusions can be drawn regarding the stresses of medical practice? What can be done to improve the medical care of physicians?

According to Dowling(1) physicians are particularly susceptible to certain illnesses. He has classified these as:

1. Hazards peculiar to profession; infections (*e.g.* T.B.), radiation, and the misuse of drugs.

2. Hazards due to the stress of work: vascular disease (especially coronary artery disease), peptic ulcer, suicide, alcoholism and narcotic addiction.

3. Hazards characteristic of the favored socio-economic class: obesity, arteriosclerosis and diabetes.

Evidently a number of conditions mentioned as particular hazards are strictly in the field of psychiatry. Psychiatric illness, therefore, accounts for a considerable amount of the morbidity among doctors; how much is very difficult to evaluate.

Dublin(2) found 1 death in 4 among doctors between ages 45 and 65 due to coronary artery disease. Compared with the general population in that age period, the rate of death from coronary artery disease is 80% higher among doctors. Work done under emotional stress and tension may be very significant in relationship to the incidence of coronary artery disease, a subject of considerable interest in psychosomatic medicine. Others(3) refer to coronary artery disease as the special occupational hazard of the profession. The objective of this paper is to review our experience in private practice in the therapy of physicians who have had psychiatric problems.

A PARTICULAR PROBLEM OF PRIVATE PRACTICE

The psychiatrist in private practice plays a significant role in the treatment of doctors. To point this up, just compare the number of doctors admitted to a public psychiatric facility like the Philadelphia General Hospital and the number admitted to a private psychiatric hospital, the Pennsylvania Hospital for Nervous and Mental Diseases. In the year 1958, of 2,000 admissions, only one (1) physician was admitted to the psychiatric department of Philadelphia General Hospital, while 12 physicians out of 441 (2.7%) admissions were patients at the Pennsylvania Hospital.

There are several good reasons for this, the main ones being the economic and socio-cultural factors. The doctor who is ill expects private care, knowing full well the value of selecting his own personal physician. As a member of a profession, he is in that social class level that subscribes to private care and generally can afford it. To preserve his professional status in a community, he is often forced to leave his home locale to enter a private hospital elsewhere. This frequently makes him ineligible for care in the out-of-state public hospitals. These same factors apply to the members of other professions as well: lawyer, dentist or clergyman.

INCIDENCE

No one knows exactly the incidence of psychiatric difficulties among doctors as a group. From Dowling's study(1) the occurrence is more than we generally assume. From a survey questionnaire of 10,000 doctors published by Parke, Davis Company,(4) .5% responded in the affirmative regarding the presence of psychiatric disorders. Two different medical school classes reported that 6½% of one and 13% of the other have been or are under the care of a psychiatrist. In 1937, Strecker, Appel, Palmer and Braceland(5) stated that "slightly more than 46% of senior students in a representative medical school suffer

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[1] Read at the 115th annual meeting of The American Psychiatric Association, Philadelphia, Pa., Apr. 27-May 1, 1959.

[2] 111 North 49th St., Philadelphia, Pa.

[3] Dr. Strecker died on January 2, 1959.

from neurotic handicaps of a major character."

STATISTICS

A total of 71 physician-patients were treated by one of the authors (M. M. P.) and constituted about 3% of the total number of different private patients seen, or 4 to 5 patients per year over a 15 year period. In order to ensure anonymity, 66 of the total will be reviewed, showing statistical data regarding age, sex, civil status, type of medical practice, diagnostic categories and therapeutic results.

EARLY SIGNS OF EMOTIONAL DISTURBANCE

The most prominent early sign of emotional disturbance in these patients was the manner of living a hurried existence, with a gradually developing chaotic everyday life regarding office hours, appointments, eating and sleeping habits, and family responsibilities. All of these significant areas of living showed evidence of disorder, inefficiency and irregularity. Then the doubts slowly developed about ordinary office procedures with overconcern about giving hypodermics, prescribing ordinary medicines or recommending newer drugs. The doctor may become aware of tension and excessive uneasiness when unable to make an immediate diagnosis. Yet, he finds himself reluctant to refer patients to consultants for suggestions regarding diagnosis and treatment for fear of losing face or manifesting his anxiety.

He soon recognizes his irritability and frustration when treatment prospects for an illness are hopeless. All of this merges into a neglect of his practice as the mounting anxiety becomes overwhelming. A number of these physicians started early to treat their own anxiety symptoms by resorting to sedatives, alcohol and narcotics.

LONG STANDING UNHEALTHY LIFE ATTITUDES

Several long standing unhealthy life attitudes among these patients came to light. The most common distinctive unhealthy trait was masochism. This appeared in several forms, particularly in the chronically self-destructive faulty work life with excessively long hours and poor organizational habits, with no attempt to encourage his practice to respect his regular office hours, no schedule breaks, no vacations, no physical exercise and no outside interests. He lived a constricted existence, often neglectful about reading books and journals or attending medical meetings for his professional self-improvement. His morbidly self-sacrificing occupational life only exposed him to chronic exploitation by others since he displayed his excessive need to suffer. As a provocative question Dr. Horst (6) recently asked, "How many physicians actually kill themselves by overwork so they will not have to bear suffering like their less fortunate patients?"

This flight into work frequently represented an escape from overwhelming personal conflict. One physician with the problem of impotence worked every day and each night as late as possible, obviously to avoid facing his marital problem.

Another unhealthy personality trend revolved about the illusion of being indispensible. His increasing fussiness and perfectionistic drives with an overdetermined preoccupation about unimportant details added up to the image of being so necessary. It was effective in constructing a life without pleasure. He was always "too busy" and there was "no one to relieve" him. Actually he saw to it that this was so.

Life long patterns of behavior regularly resorting to uneconomical mental dynamisms resulted in disturbances of varying degrees. These patients utilized denial, rationalization, reaction formation and overcompensation all too much. A striking example of denial and rationalization showed up in the narcotic addiction problem. These doctors took narcotics in spite of their previous academic training and understanding of drug addiction, denying the fact of their own vulnerability and rationalizing their actions on the basis of a medical indication which was totally unreal. For instance, several patients used narcotics for an overwhelming sense of fatigue, hardly a therapeutic indication for such heroic measures.

Being a doctor does afford an opportunity for a life with a reasonable degree of independence, but an excessive need fosters a drive for power, prestige and recognition in the form of rugged individualism, too

much competitiveness, and "playing God" (7). Several women doctors indicated that they selected a medical career to compete with men, or to avoid competing with women.

DIAGNOSTIC AND MANAGEMENT PROBLEMS

Obviously it is wasteful of an important human potential resource to delay diagnosing and treating a doctor with emotional illness. Generally speaking the sooner the diagnosis, the quicker the treatment and the greater chance for an early return to the important work of practising medicine. However, more often there is a considerable amount of hesitation and delay in getting the patient into active therapy. His own resistance is common enough, but frequently it is the result of unwitting neglect by the family and colleagues who rationalize that he, as a doctor, ought to know when and how to take care of himself. He doesn't.

His regression with illness can be quite complete and has nothing to do with his intellectual resources. He deserves just as objective a diagnostic study and recommendation for psychiatric therapy as possible.

There is definitely an added burden of responsibility for the psychiatrist looking after a fellow physician. The stirred up positive and negative counter-transference feelings, especially the identification, are well known. As a corollary, the cardinal principle in treatment and management consists in treating the physician patient as any other patient, purposefully omitting the fact of his special medical education. It is improper to assume that his past medical information adds up to special personality controls or particular immunity from emotional conflicts.

The management of the doctor-patient is all too often complicated by stressful situational problems. As an example, it is frequently necessary to recommend treatment in an enviroment some distance from the locale of his practice in order to maintain his professional standing and ensure future rehabilitation.

TYPES OF TREATMENT

Psychotherapy on an outpatient basis was the main type of treatment. About one-third of these patients required hospitalization for a varying period because of the severity of their difficulties, for protection and support, for medical care of their toxic states due to alcohol or drugs, and for specific somatic forms of therapy, such as electroshock (4 patients). With the exception of 2 patients, the average hospital stay was a little less than 4 weeks: one was transferred to a closed hospital and remained there 8 years before his discharge, while the other was a patient in an open section for 9 months. Approximately one-quarter of the patients were seen in a diagnostic and evaluation process or broke off treatment so early for varying reasons that they can scarcely be included in evaluating the therapy of this entire group.

Eighteen (27%) of our patients presented themselves with the problem of addiction. Our approach to the management and treatment of addiction centers upon two main principles: (a) achievement of abstinence—a completely alcohol or drug free existence; and (b) integrative psychotherapy. Unless the patient has reached the point of accepting abstinence as his only goal, therapy is valueless. There can be no psychotherapy of any lasting worth so long as the patient continues to take one drink or a "small dose" of medicine.

RESULTS OF TREATMENT

The problem of evaluating therapy presents its usual difficulties of no uniform standards and the too heavy reliance upon the clinical investigator's subjective evaluation. Taking that into account, we are impressed with the fact that this group of patients is a very satisfactory one from the treatment point of view. They have a reasonable chance of good progress in achieving the generally accepted therapeutic goals of becoming symptom free, developing emotional maturity and moving toward greater self-realization.

These satisfactory results make us feel that the doctor's life, his education, training and daily existence, have many meaningful values for the development of personality assets. Such areas of maturity can be explored and exploited in psychotherapy.

Below are the statistics on the patients in this study.

PHYSICIANS AS PSYCHIATRIC PATIENTS

1. *Sex*

Male	57	66
Female	9	

2. *Civil Status*

Married Males	45	51
Married Females	6	
Single Males	12	15
Single Females	3	

3. *Age Groups*

	No.
Age 20 to 29	11
Age 30 to 39	23
Age 40 to 49	20
Age 50 to 59	8
Age 60–	4

4. *Type of Medical Practice*

General Practice		17
Specialists		36
Surgery	(7)	
Psychiatry	(5)	
Pediatrics	(5)	
Radiology	(4)	
Other	(15)	
Residents		9
Interns		4

5. *Diagnosis*

Psychotic Disorders		15
Schizophrenic reaction	(2)	
Manic-depressive reaction	(11)	
Involutional psychotic reaction	(2)	
Personality Disorders		32
Personality Trait Disturbances	(12)	
Sociopathic Personality Disturbance	(20)	
Alcoholism (addiction)	7	
Drug addiction	11	
Barbiturates	2	
Benzedrine	1	
Narcotics	8	
Other	2	
Transient Situational Personality Disorders		6
Adult Situational Reaction	(6)	
Psychophysiologic Gastrointestinal Reaction		2
Psychoneurotic Reactions		11
Anxiety Reaction	(1)	
Depressive Reaction	(2)	
Phobic Reaction	(1)	
Obsessive compulsive reaction	(2)	
Psychoneurotic reaction, mixed type	(5)	
Total		66

6. *Type of Therapy*

Psychotherapy	46
EST	4
IST	1
Consultation (or Counseling)	19

7. *Location of Therapy*

Outpatient Therapy	46	
Hospital Therapy	20	
Inpatient Open Hospital	(15)	
Inpatient Closed Hospital	(5)	

8. *Results of Treatment*

Recovered or much improved	28	(42%)
Slightly improved	8	(29%)
No change	9	
Worse	2	
Consultation only	19	(29%)
Total	66	

SUMMARY

Psychiatric illnesses account for a considerable amount of the morbidity among doctors. Although no one knows the exact incidence, the treatment of emotionally ill doctors falls into the special province of the psychiatrist in private practice. Several significant early signs of emotional disturbance, particularly in the conduct of his profession, stand out; such as a hurried existence, self-doubts about the ordinary medical procedures, excessive tension when confronted with a difficult diagnostic problem, and gradual neglect of his practice. The most common long standing unhealthy life attitude was a morbid, self-sacrificing, driven existence, best described as masochism since it always exposed him to exploitation by others.

Much delay was the general rule before a doctor got into therapy, even though therapy turned out satisfactorily in spite of stressful situational problems. While the types of disorders ran the gamut of the different diagnostic categories, the largest number had the diagnosis of personality

disorder. Twice as many specialists as general practitioners made up this group. The treatment was largely outpatient psychotherapy. The cardinal principle in management consisted in treating the physician-patient, purposefully omitting the fact of his special medical education.

Conclusions

From the review of these physician-patients seen in private practice over a period of 15 years, several conclusions may be drawn :

1. Emotionally ill doctors do not seek help for themselves early enough, neglecting emotional problems as they do their physical disabilities.

2. Special emphasis should be paid to overcoming the usual resistance to the proper diagnosis and treatment of doctors with problems, keeping in mind the early signs of emotional disturbance showing up in his conduct of his profession.

3. The outlook with adequate psychotherapy is quite satisfactory.

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TREATMENT IMPLICATIONS OF A NEW CLASSIFICATION OF PARENTS OF SCHIZOPHRENIC CHILDREN [1]

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This paper describes the variations in personality structure of the parents of schizophrenic children. The different types of manifest personality of the parents have important implications for the treatment of the total family.

Our research unit has participated in the study of 40 schizophrenic children and their parents at the outpatient clinic of the Judge Baker Guidance Center and 40 families with schizophrenic children at the inpatient setting of the Metropolitan State Hospital. The research material is drawn from long-term psychotherapy (1 to 10 years) with both parents and child, diagnostic procedures, psychological testing, and direct observation of the parent-child interaction. The schizophrenic children of these parents are between 6 and 17 years of age and show no demonstrable organic pathology.

The problem of schizophrenia presents many facets for investigation. The relationships between the genetic(8, 9), sociological(14), chemical(2, 3, 7, 11) and psychological(1, 4, 5, 6, 12, 13, 14, 15, 16) phenomena are being studied by many investigators. The present research concentrates on the study of the personality phenomena and psychogenic factors observed in the families of schizophrenic children.

Our interest in parental personalities developed when we observed differences between parents of children seen at inpatient and outpatient settings. We found that widely varying treatment and management procedures were required for the 2 settings. For example, the schizophrenic child seen at the outpatient clinic more frequently would have an intact family with the father a scientist or university professor, and the mother equally well educated and apparently competent. This would be in marked contrast to the family background of some of the schizophrenic children at the state hospital who came from broken homes with deserting, psychotic, or alcoholic parents. Further study led us to believe that, in spite of the manifest differences in parents from the 2 settings, there were important basic similarities of pathology in the personalities of all these parents.

Our central interest is the treatment implications of our classification of the parents. The specific pathology demonstrated by these parents occurs at 2 levels, which we describe in terms of core disturbance and superstructure. Regardless of the externals of their behavior, these parents all show a similar core disturbance. They express the fear that experiencing their inner tensions will lead to their own total destruction or annihilation. They may express this basic fear in many ways, and it may take a long period of treatment before they are able to verbalize any aspects of their fear. The stimuli which may threaten the parent with his potentially overwhelming anxiety are found in the entire gamut of non-differentiated emotions, *e.g.*, anger, fear, or sexual excitement, associated with closeness to an object—any of which can be a threat capable of mobilizing potentially overwhelming anxiety. In treatment the parents, particularly in the early contacts, act in ways designed to protect themselves against the arousal of their intense feelings. When eventually they are able to reveal their underlying fears, they often express them in terms of the familiar world destruction fantasies of the schizophrenic. Not only do these parents devise defenses against external arousal of their inner anxiety, but they also develop pathologic defenses in order to cope with the anxiety itself. We find that these mechanisms which are developed to protect against the fears of annihilation are the familiar psychotic mechanisms which deny reality. Some of the parents function predominantly at this level and demonstrate an overtly schizophrenic personality. The majority of

[1] Read at the 115th Annual meeting of The American Psychiatric Association, Philadelphia, Pa., Apr. 27-May 1, 1959.

[2] Judge Baker Guidance Center, Boston, Mass.

the parents studied also demonstrate various superstructures of personality organization which they use to deal with their core disturbance. However, the predominant characteristics of their manifest personality constitute the basis for our separating them into 4 diagnostic categories arranged in order of increasing manifest disturbance. We observe also some mixed types with overlapping.

1. *Pseudoneurotic.* This group is analogous to the parents of autistic children described by Kanner(10). They are frequently professional people often having achieved to a considerable degree within their own circumscribed field. The fathers most frequently are teachers, scientists, communications personnel in radio and television, engineers, and accountants. They use neurotic-like defenses (denial, avoidance, rationalization, undoing, reaction formation, compartmentalization, intellectualization, *etc.*) to compulsively maintain a rigid, stereotyped life situation, often functioning effectively in narrow areas of endeavor. Close observation, however, gradually reveals their underlying psychotic mechanisms with their primary process phenomena, including disturbances in reality testing. These parents often clearly express their identification with the psychotic child, *e.g.*, one mother who had completed graduate school education and was very busy with numerous community activities, acknowledged that she too, had been isolated, withdrawn, and asocial when she was growing up. Later in therapy, she explained that the family cat acted in many psychotic ways just like her son; and then later the mother herself meowed and made catlike motions on greeting her child.

Social interaction in this group appears adequate superficially, but it is kept at a tolerable minimum and always has an impersonal quality. These parents use various devices to control external stimulation from human sources. For example, Mr. Q brought his hi-fi phonograph records to a party in order to drown out the conversation and control the people.

In treatment, these parents tend to be very regular in attendance, but we find that they deal with therapy in the same way that they handle their child and other life situations. There is apparently the implied hope that adhering to a minimum of the required forms of behavior, *e.g.*, attending clinic, but not getting emotionally involved in the treatment, will prove sufficient. There is a tendency to discuss problems in an intellectual way. Many are well read on childhood schizophrenia, sometimes using the information as a further barrier to treatment. In the initial stages of therapy all areas of competence need to be supported. Social approval is very important to these parents; and their areas of adequacy can be utilized to form a base of relative security for later dealing with the more disturbed features of their personality. Placing blame for the child's illness is often attempted by one parent reviewing various taints in the spouse's family. It is necessary to refrain from questioning these defensive maneuvers until the treatment relationship gives the parents the security to face their feelings about themselves.

2. *Somatic.* The occupations represented in this group include skilled factory labor, nursing, teaching, and small business operation. The symptom focus of this group is on the body in various ways, including hypochondriacal fears and actual somatic reactions. The hypochondriacal parents are fearful of body deterioration or express concern about body functioning, while the parents with somatic symptoms suffer from cardiovascular reactions, skin eruptions, asthma, headaches, *etc.*

These parents with somatic reactions express the primitive thought processes of the schizophrenic. One mother with eczema thought of her skin as scaly and that the scales could poison those around her. This mother gave her schizophrenic child a scaly animal, an alligator, for a pet. The personality structure of these parents is in contrast to patients with psychosomatic reactions who express their conflicts at a less regressed level of development. Although these parents with the somatic reactions may, like the pseudoneurotic, attempt to intellectualize and deny, they are more openly aware of their own pathology and their involvement in the child's difficulties. In treatment, these parents, who are so fearful of their emotions, often convey their feelings through a body

language. For example, one mother expressed her feelings about a daughter's wedding by having to go to the hospital with a simulated "heart attack," which she herself later identified as a "broken heart." In the treatment of these parents, particularly in the early stages, it is advantageous to relate to them around their concerns about physical illness, rather than confronting them with the underlying implications of their physical reactions. Only gradually and much later, it becomes possible to approach the deeper sources of their anxiety.

3. *Pseudodelinquent.* Among the range of persons in this group are bartenders, armed service personnel, criminals, alcoholics, and transient laborers. They utilize antisocial acting out either in gross form; *e.g.*, stealing, promiscuity, desertion, physical abuse, or in a more subtle form like occupational desertion. These parents of the schizophrenic child are attempting primarily, by their antisocial behavior, to externalize the overwhelming anxiety associated with the destructive forces they feel within themselves. For example, the promiscuous mother of a schizophrenic child said that she had to engage in sexual activity or else she would go crazy. The antisocial behavior for these parents serves to ward off their underlying psychosis. This is in contrast to the promiscuous delinquent who describes her behavior as a search for a missing parent. The delinquent patients with impulse-ridden character disorders (12) do not show psychotic mechanisms, have a relatively more intact personality, and are delinquent as a defense against loss and depression.

It is very difficult to involve these pseudodelinquent parents in any sustained treatment relationship. Our information is primarily derived from diagnostic study and unsustained contact.

During treatment it is particularly important to understand that the antisocial behavior has meaning and is frightening to these parents. They convey the concept that they are swept into antisocial action by the overwhelming force of their anxiety. For these parents the stimulation of emotional interaction is particularly threatening. They may respond if first helped to develop an intellectual framework around which they can comprehend and contain their emotions. This may be accomplished by helping them see the patterns of their behavior in a time sequence without moral judgment or pressure to face the underlying emotions. Later, they can be helped to approach their feelings more directly. These are particularly explosive parents whose fearfulness is equaled only by the potential violence of their acting out; however, if their imagination and intellect can be reached, they may be able to respond.

4. *Overtly psychotic.* When we study these families we find farmers, junk dealers, clerks of many kinds, housepainters, and taxi drivers. These parents, from the point of view of adjustment to environment, are least successful in their defense structure. Classical psychotic symptomatology is seen, such as hallucinations, delusions, and reality distortions. Some of these parents require hospitalization, while others are able to maintain themselves marginally within the community. In treating them it is necessary to be aware of the importance of the total family interaction.

CLINICAL FINDINGS

We studied the classification of all these parents, and we found significant differences between the populations seen at the Judge Baker Guidance Center and the Metropolitan State Hospital. There are proportionately more pseudoneurotic and somatic types of parents who come to the outpatient clinic, whereas pseudodelinquent and psychotic types predominate at the inpatient setting.

When categories of parents are combined into a comparison of the community syntonic defense structure (pseudoneurotic and somatic) with community dystonic defense structures (pseudodelinquent and psychotic), the difference is significant at the .001 level.

These differences in the incidence of family types in different settings have an influence on the treatment planning required for the management of the case.

We find that the parents of schizophrenic children tend to marry individuals with a manifest defense structure that is similar

TABLE A

CLASSIFICATION OF PARENTS ACCORDING TO PERSONALITY SUPERSTRUCTURE
JUDGE BAKER GUIDANCE CENTER AND METROPOLITAN STATE HOSPITAL

	Pseudo-neurotic	*Somatic*	*Pseudo-delinquent*	*Psychotic*	*Totals*
Judge Baker Guidance Center	34	17	8	14	73
Metropolitan State Hospital	20	12	22	21	75
Totals	54	29	30	35	148

Chi Square significant at p—.01
Contingency coefficient—.29

TABLE B

CLASSIFICATION OF PARENTS ACCORDING TO PERSONALITY SUPERSTRUCTURE
JUDGE BAKER GUIDANCE AND METROPOLITAN STATE HOSPITAL

	Community Syntonic (Pseudoneurotic and somatic)	*Community Dystonic (Pseudodelinquent and psychotic)*	*Totals*
Judge Baker Guidance Center	51	22	73
Metropolitan State Hospital	32	43	75
Totals	83	65	148

Chi Square significant at p—.001
Contingency coefficient—.27

TABLE C

MARITAL ASSOCIATION OF PARENTS ACCORDING TO
PERSONALITY SUPERSTRUCTURE

		Fathers				
		Pseudo-neurotic	*Somatic*	*Pseudo-delinquent*	*Psychotic*	*Totals*
Mothers	Pseudoneurotic	18	3	1	1	23
	Somatic	7	3	2	4	16
	Pseudo-delinquent	2	0	10	1	13
	Psychotic	2	4	4	8	18
	Totals	29	10	17	14	70

P less than .001
Contingency coefficient—.63

to their own. This tendency is significant at the .001 level.

In the therapy for all of these parents, the ultimate goal is to deal with the core of pathologic defense mechanisms and their effects upon the child, but these parents first have to be approached through the superstructure of secondary defenses. In addition, some of their secondary defenses, such as intellectual capacity, include some of the personality strengths which have to be supported as the basis of dealing with the more disturbed aspects. With all the types of parents of schizophrenic children, the family structure is in a delicate balance. Therapeutic intervention has an effect on all the participants. Help toward a remission for one family member may increase the anxiety in the other family members and may produce a counter-pressure against therapy. We emphasize the necessity of treating both parents as well as the child.

SUMMARY

This paper reports a study of 40 parents of outpatient and 40 parents of inpatient state hospital schizophrenic children. Despite a similar core pathology, the parents of schizophrenic children demonstrated major differences in their personality superstructure. The differences in occupation range from competent college professor to the transient and unskilled worker. Some are highly successful. Some are hampered in their achievements, and suffer illnesses such as asthma, and some are hospitalized schizophrenics. We were able to describe and classify these 80 parents according to their manifest personality structure within 4 categories. These are pseudoneurotic, somatic, pseudodelinquent, and psychotic. Although treatment is directed toward the similar core pathology in all the parents, we discuss the major differences in treatment and management techniques required in each of these types.

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CLINICAL NOTES

TRIFLUOPERAZINE COMBINED WITH CHLORPROMAZINE

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In a previous study(1) on the treatment of chronic schizophrenics with trifluoperazine (Stelazine) alone, it was found that this drug had an extremely potent anti-psychotic effect (*i.e.* combating the delusions and hallucinations of the schizophrenic) with a minimal sedative action, and that it was most useful in activating the withdrawn, apathetic, disinterested, regressed patient. However, it was subsequently observed that many of these regressed patients who were at first stimulated by the drug to a state of alertness and interest in their environment, later became more tense, irritable, hostile and even aggressive when they were maintained on trifluoperazine for many months. Furthermore, our study also showed that the usefulness of trifluoperazine was diminished by the high incidence of extra-pyramidal side-effects, such as, akathisia, Parkinsonism and dystonic symptoms. These were more marked as the dosage was increased (from 2 mg. q.i.d. to 30 mg. q.i.d.).

For these reasons, it was decided to combine trifluoperazine with chlorpromazine which has a greater sedative action and less extra-pyramidal side-effects. In this way, the dose of trifluoperazine could be kept lower without sacrificing potency, and whenever increased irritability manifested itself, the trifluoperazine could be reduced still further and the chlorpromazine raised.

One hundred eighty chronic schizophrenic female patients were chosen for the present study. Their ages ranged between 16 and 69, and they had been continuously hospitalized for 2 to 27 years. All had been receiving tranquilizing drugs for at least 2 years with slight or no improvement. Sixty-nine patients were receiving chlorpromazine (Thorazine) alone, 110 patients a combination of chlorpromazine and proclorperazine(Compazine), and 1 patient proclorperazine alone. These patients were then placed on a combination of chlorpromazine and trifluoperazine. The dose of chlorpromazine ranged from 50 to 200 mgs. q.i.d., and the dose of trifluoperazine from 1 to 10 mgs. b.i.d. They were kept on this combination of drugs for 4 to 8 months, and at the end of that period their progress was evaluated as follows: 8 patients were markedly improved, *i.e.*, in remission and able to be released from the hospital; 60 were moderately improved, *i.e.*, although not well enough to live outside of the hospital, they were now usually cooperative, more alert, more interested in their environment, more sociable, and more active in the hospital programs; 47 were slightly improved; 35 were unimproved, and 30 were worse, becoming restless, irritable, hostile and aggressive despite adjustment of drug dosage. In the latter group it was finally necessary to discontinue the trifluoperazine, leaving chlorpromazine alone. The disturbed symptoms then gradually disappeared. It should also be noted that 30 of the moderately improved patients and 28 of the slightly improved patients showed most of their improvement early in therapy, but after several months they began to manifest increased irritability and restlessness, necessitating a reduction of trifluoperazine and a raise of the chlorpromazine dose.

In summary, although trifluoperazine is most useful in activating the withdrawn, regressed schizophrenic, the drug often tends to produce increased restlessness, irritability, hostility and even aggression when it is used in long-term therapy. By combining trifluoperazine with chlorpromazine which has a greater sedative action, we have been able to control the increased irritability in most instances, without sacrificing antipsychotic potency.

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CHLORPROMAZINE (THORAZINE) "LIGHT-EXHAUSTION" IN ADOLESCENTS

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The recent clinical note by Ford(1), as well as papers by Mahrer, *et al.*(2) and Ext(3), on mepazine (Pacatal)–induced heat-stroke has suggested that it would be useful to report on a similar kind of occurrence associated with the use of chlorpromazine. In all of these reports, heat-stroke is attributed to a peripheral atropine-like action of mepazine or mepazine with proclorperazine. The almost uniform presence in our cases of a sub-normal oral temperature would tend to suggest a different condition than that described by these authors, and a mechanism other than the atropine-like action of a phenothiazine. However, the inference that the two conditions may be related, as are heat-stroke and heat-exhaustion, cannot be escaped. Based on our observations, the phenomenon to be described is termed "light-exhaustion."

In the summer of 1957, about 40% of the 75 boys, ranging in age from 12-16, resident in our Unit, were on varying dosages of chlorpromazine, ranging from 75-300 mgs. daily in divided doses. Most boys were in the mid-range of dosages.

The boys in our unit walk approximately 200 yards from our building to participate in recreational activities in the playground. They had gone and returned without incident on many occasions during the spring and early summer of the year, even on some quite hot and humid days. In the latter part of June, the day being quite hot and the sun shining brightly, 4 boys began to complain of weakness within 5 minutes of having arrived at the playground. In this short time, they had not really started to exert themselves.

It was quickly noted that the boys were unusually pale. The skin of each was felt to be cold and wet. Pulses were determined and described as rapid, somewhat difficult to palpate, and in two instances, irregular. The sensation of weakness was described by the affected boys as feeling unable to move at all, associated with feeling "light-headed." With assistance and encouragement, three boys walked back to the building. It was necessary to carry one of them. After 10 minutes of bed-rest, pulses became full but remained a little rapid. Within 30 minutes, the boys were again "normal," subjectively and objectively. In the next few weeks, 8 other boys were similarly affected. By this time, we had started to take oral temperatures, which ranged from 96.6° to 98.7°F. Most temperatures clustered around 97.6°F. Substituting therapeutically equivalent doses of other tranquilizers, or discontinuing tranquilizer medication in some cases altogether, we experienced no further difficulties that summer.

By the summer of 1958, having forgotten our previous summer's experience, we had 30% of our boys on chlorpromazine. Another incident similar to the ones mentioned, this time involving 3 boys, again occurred. At this point, we kept all the boys indoors for a week while we changed tranquilizers from chlorpromazine to perphenazine (Trilafon) and had no further difficulties. In this past, very hot summer of 1959, chlorpromazine was replaced early by perphenazine. There were no mass attacks of weakness.

Prior to these incidents, the characteristic dermatologic and occasional systemic reactions due to the photo-sensitizing properties of chlorpromazine had been partially prevented through the use of sunhats and the somewhat bothersome application of an ultra-violet ray screening ointment. These precautions had not been needed for our negro boys, who comprised 10% of our population.

Although the number of boys involved is small, it may be proper to report that not one suffering an attack of weakness was a negro. Further, it appeared to us that these incidents occurred only when the sky was unclouded, and that they did not occur on equally hot but slightly cloudy days. Also, they did not occur in the Unit proper which became very hot at times, being located on the top floor of a four-story brick building.

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In summary, the occurrence of attacks of weakness in adolescent boys taking chlorpromazine, associated with very mild exertion, high environmental heat, and possibly more significantly, high energy levels of ultra-violet radiation, and accompanied by sub-normal oral temperatures, is reported. The low body temperatures noted, as well as the possibly significant role of ultra-violet radiation, suggest that the mechanism of this effect is a central one, rather than a peripheral atropine-like inhibition of sweat secretion. For the reasons stated, we use the term, "light-exhaustion," in characterizing this phenomenon.

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THERAPEUTIC IMPORTANCE OF EXTRA-PYRAMIDAL PHENOMENA EVOKED BY A NEW PHENOTHIAZINE

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During a trial of 2-dimethylsulphamoyl-10-3 (4-methyl-1-piperazinyl)propyl phenothiazine, 7843 R.P.,[2] resemblance between the neurological manifestations induced by this drug and those occurring as sequellae of epidemic encephalitis was noted. 7843 R.P. produces with more constancy and intensity than any previously tested drug, extra-pyramidal disturbances. These may be employed as therapeutic indices and disappear entirely after withdrawal of the drug.

During the treatment of 40 male schizophrenic patients, with durations of illness ranging from 2-40 years and refractory to all forms of treatment, in a majority the state of akinesia without hypertonia ; the akineto-hypertonic state ; the hyperkineto-hypertonic state was produced. Excito-motor phenomena and autonomic disturbances like hypersudation, hypersialorrhoea, and seborrhoea occurred in a number of patients. Tremors, myoclonic movements and inversion of the sleep rhythm were frequently observed. Additional signs and symptoms, which increased the similarity to epidemic encephalitis, included painful joints ; positive and inverse Argyll-Robertson phenomenon ; ankle oedema ; and localized sweating, erythematous plaques and, frequently, hyperaesthesia of the soles. The order of appearance of the various symptoms was also observed to be very similar to that of von Economo's disease.

Correlation of drug conditioned extra-pyramidal disturbances with the therapeutic efficacy existed throughout the trial. Twenty-one patients have shown total remission of their schizophrenic symptoms after producing marked extra-pyramidal disturbances. In the remaining 19 patients, extra-pyramidal symptoms were less marked and slower in appearance. Of these, 8 have been very much improved ; 4 much improved ; 6 improved. The one failure has shown no effects of the drug at all. The prophylactic administration of anti-parkinsonian agents, whilst reducing or abolishing extra-pyramidal disturbances, reduced the efficacy of the new phenothiazine.

Delay's "discontinuous treatment" was adopted, *i.e.* the patient receives gradually increasing doses of the phenothiazine until maximum muscular hypertonicity is achieved, avge. dose 30-50 mg. t.d.s.). This level is maintained for 5 days when the drug is withdrawn. Improvement in the mental state usually occurs as the drug-induced neurological abnormalities dissipate. Should total remission be achieved at that stage, a maintenance dosage of 2½ mg. —10 mg. daily is given. If psychiatric symptoms remain, further courses of treatment are started with the dosage which was previously found to produce maximum hypertonicity. Hallucinations and aggressive behaviour commonly disappear within 48

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[2] RP 7843 was provided through the courtesy of May & Baker Ltd., Dagenham, Essex.

hours of inception of the first course. "Defect States" may require several courses.

SUMMARY

The neurological manifestations evoked RP 7843 were observed to be analogous with those of epidemic encephalitis. These extra-pyramidal disturbances are of value because of the associated therapeutic benefit but also for the control of dosage and as prognostic pointers. This sulphamoyl phenothiazine is of extraordinary value in the treatment of all stages of schizophrenia and raises new theoretical considerations.

A RAPID URINE COLOR TEST FOR THIORIDAZINE (MELLARIL, TP 21, SANDOZ)

IRENE S. FORREST, PH.D., FRED M. FORREST, M.D., AND AARON S. MASON, M.D.[1]

A recently introduced phenothiazine derived drug, thioridazine (Mellaril, TP 21), also known chemically as 10-[2-(N methyl-2-piperidyl) ethyl] phenothiazine hydrochloride, is widely used as a neuroleptic of reportedly reduced toxicity and side-effects. In a number of previously published rapid urine tests for various phenothiazine drugs (1-3) we pointed out the purpose and importance of objectively testing for actual drug intake, primarily on the wards of mental hospitals, in outpatient drug clinics, and also in private psychiatric practice.

All of the above-mentioned urine tests were devised for specific drugs and specific ranges of dosage to yield optimal color chart readings. Although these tests as well as a general test for small amounts (10 to 150 mg. daily) of all phenothiazine drugs (4) react with urines containing thioridazine to some extent and in a limited dosage range, they do not produce sufficiently gradient color development over the entire dosage range of this drug for proper semi-quantitative evaluation.

SPECIFIC TEST FOR THIORIDAZINE (MELLARIL)

A specific test reagent for thioridazine was therefore devised. A solution consisting of 2 parts of 5% ferric chloride solution and 98 parts of 30% (by volume) sulfuric acid proved most satisfactory over the dosage range of 75 to 2,500 mg. per day. The test is performed by placing 1 cc. of urine in a test tube, adding 1 cc. of test reagent and shaking gently. The resulting color reaches its maximum intensity within 20 to 30 seconds, and is read thereafter against the color chart. In doses below 150 mg. per day, a pale purplish pink will result (the + level of the color chart), with more intense purple to violet shades of color being formed for increasing daily doses to approximately 1,000 mg., (++ to ++++ levels of the chart). At drug intake of more than 1,000 mg. per day, opaque, deep violet to blue reactions are obtained.

RELIABILITY OF TEST, LIMITATIONS AND POTENTIALLY INTERFERING FACTORS

The Mellaril color complexes are stable enough at all dosage levels to permit leisurely reading against the color chart. No false negative tests have been seen to date in more than 1,800 urine specimens containing Mellaril as the only phenothiazine compound. In cases of extreme urine dilution after fluid intake of 3,000 cc. or more per day, a urine of a patient ingesting *e.g.*, 600 mg. thioridazine per day might read only + to ++, while a 200 mg. urine might appear negative. In these cases, as well as in testing urine specimens of patients receiving less than 75 mg. per day, it might be advisable to double check by carrying out a supplementary and equally simple test for small amounts of all phenothiazine drugs(4). Two false positive tests have been encountered in a series of 500 control urine specimens free of phenothiazine compounds. They were due to the excretion of large amounts of antitubercular medication, especially paraaminosalicylic acid and metabolites thereof. No false positives in the

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RAPID URINE COLOR TEST FOR THIORIDAZINE (MELLARIL, SANDOZ)

Place 1 cc. of urine in a test tube, add 1 cc. of test solution,* mix by shaking gently, allow color development to reach its maximum intensity (20 to 30 seconds), then read against the color chart :

Daily Drug Dose:

75-150 mg. 150-450 mg. 450-800 mg. 800 mg. & over

* Test Solution consists of : 2 parts of 5% ferric chloride solution
98 parts of 30% sulfuric acid (by volume).

Each color of the chart represents an average of 500 urine tests per dosage level. At each level of intensity some deviations towards more pink or more violet shades have been encountered.
Unspecific darkening of urine on addition of test solution, and/or absence of pink or purple color development is considered a negative test.

presence even of large amounts of acetylsalicylic acid and its metabolites were seen due to the low pH of the mixture of urine and reagent. (The total sulfuric acid concentration amounts to 15% which may cause unspecific darkening of some urine specimens but precludes the false positive reactions due to urinary aspirin, commonly seen in the presence of ferric chloride at an overall acidity of less than 5% of a mineral acid.)

Urinary bile metabolites arising at impaired liver function might conceivably yield false positive tests, but have not been encountered in this series of 500 control urines.

All urines from patients suffering from phenylketonuria react to some extent with the Mellaril test reagent. The color development in these cases ranged from traces to the ++ level of the color chart in varying shades of pink.

Other phenothiazine compounds either administered simultaneously or previously —or discontinued even as long as 12 weeks before Mellaril therapy—interfere with the proper interpretation of the Mellaril test, especially if the previous drug dosage was high, and the patient a "slow excreter"(5). The Mellaril reagent will yield color reactions also with other phenothiazine compounds, particularly those not linked to piperazine, but the color chart is specific for thioridazine and does not yield semiquantitative data for other phenothiazine compounds, for which it is a potential, but not an optimum reactant.

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CLINICAL EVALUATION OF CHLORPROTHIXENE

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Chlorprothixene [trans-2-chloro-10-(3-dimethylaminopropylidene) thiaxanthene hydrochloride] is a new, non-phenothiazine, central nervous system depressant which is structurally identical with chlorpromazine other than for the fact that a carbon has been substituted for the nitrogen in the phenothiazine configuration. Preliminary animal and human studies seem to suggest that its pharmacodynamic and therapeutic properties are similar to those of chlorpromazine. Animal toxicity studies with this compound have been most encouraging in that they indicate a high level of non-toxicity.

This report pertains to 50 chronically psychotic hospitalized patients with an average age of 41 years and an average chronicity of illness of 5.8 years who were selected to test the therapeutic efficacy of this compound. This test-group consisted of patients in both "hyper" and "hypo" states and the majority of them were of the schizophrenic variety. Eleven evaluators, with an average case load of 4+ patients participated in this study.

Prior to the onset of medication and at two week intervals thereafter, each patient received a battery of liver function tests (Alkaline Phosphatase, Indirect van den Bergh, Thymol Turbidity and Cephalin Flocculation), complete blood studies including micro-hematocrit and complete urinalyses including a determination of urobilinogen.

The usual tranquilizer side effects (*i.e.*, drowsiness, dizziness, ataxia, jaundice, parkinsonism), were not encountered. Two patients, both receiving in excess of 300 mg. chlorprothixene per day developed slurred speech. In one instance this was persistent and in the other was ameliorated by the reduction of dosage.

In no instance was it necessary to discon-

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tinue therapy because of adverse drug effects. The average duration of treatment at the time of final evaluations was 106 days. Various dosage levels were employed by the individual clinicians. The usual starting dosage was 50 mg. b.i.d. or t.i.d., and some patients received up to 250-500 mg./day.

The usual, intermittent, abnormal liver function tests were noted. These were in all respects similar to the sporadic, abnormal readings encountered in unmedicated control groups of hospitalized psychotic patients.

The most effective dosage levels appear to be 50-150 mg./day. No particular advantage was apparent by exceeding this level. Forty-five percent of the schizophrenic patients showed significant, overall improvement and 52% of the "hyper" states (irrespective of diagnostic category) showed significant overall improvement. Positive changes in mental status usually became apparent at about the 10th to 14th day of treatment. The response of "hypo" state patients was disappointing, 21% showing a significant overall improvement.

The target symptoms which appear to respond most effectively to chlorprothixene therapy are 1. Interest in environment; 2. Delusions; 3. Hyperactivity; 4. Hostility; 5. Combativeness; 6. Tension and 7. Affect.

Upon the basis of this study it appears that chlorprothixene compares favorably with most of the phenothiazine tranquilizers. It has the added advantage of being non-toxic and should be a valuable addition to our armamentarium of psychotherapeutic drugs. Because of its non-toxicity, it may be useful in the treatment of outpatients where adequate clinical supervision is not feasible. It may also be indicated as substitution therapy in patients who have responded adversely to a phenothiazine compound.

TRIAL OF Ro 1-9569/12 ON A GROUP OF APATHETIC CHRONIC SCHIZOPHRENIC PATIENTS

T. E. WECKOWICZ, M.B., CH.B., D.P.M.,[1] T. WARD, M.D.,[1] AND A. HOFFER, PH.D., M.D.[2]

Ro 1-9569/12 is 2-oxo-3-isobutyl-9, 10-dimethoxy-1, 3, 4, 6, 7, 11b-hexahydro-2H-benzo quinolizine.

The derivation of this compound from phenylethylamine and the similarity of its structure to adrenaline suggest that it should be an activating compound similar to the sympathomimetic amines like amphetamine. It is therefore possible that this drug might activate apathetic schizophrenic patients, who are the most difficult therapeutic problem in mental hospitals. This is a pilot study[3] undertaken to test this possibility.

Twenty chronic male schizophrenic patients were chosen from a chronic ward of a mental hospital. The clinical picture in all the cases was that of profound lethargy and apathy. Over-feeding was a problem with many. The patients were rated on the Weyburn Assessment Scale. On the basis of this rating and also on the basis of the age and length of hospitalization, they were divided into two matched groups, 10 patients in each group. The sample included a pair of identical twins who had developed schizophrenic illness within a few months and who presented identical clinical picture. One twin was included in the first group, the other in the second.

A double-blind method was used; one group received placebo, the other received the drug. The trial lasted 14 days, during which time both groups received one 50 mg. tablet twice daily. After two weeks the patients were rated again on the Weyburn Assessment Scale and assessed clinically by

[1] Respectfully, Research Psychiatrist and Psychiatrist, The Saskatchewan Hospital, Weyburn, Sask.

[2] Director of Psychiatric Research, University Hospital, Saskatoon, Sask.

[3] This work was carried out using funds provided by the Rockefeller Foundation and the Federal Fund.

We would like to express our thanks to Hoffman-La Roche Inc., for supplying Ro 1-9569/12 and placebo tablets, and also to Dr. H. F. Osmond, the Superintendent of the Saskatchewan Hospital, Weyburn.

the psychiatrist in charge and the ward supervisor[4]. The patients were weighed before and after the trial and also a white cell blood count was carried out. Blood pressure was checked daily.

There was no difference between the groups on the Weyburn Assessment Scale at the completion of the trial. On clinical assessment, in the placebo group, there was no change in 8 cases, slight improvement in 1 case; 1 case was worse. No patient became more active.

In the drug group there was no change in 4 cases, 2 patients improved slightly, the remaining 4, although no "improvement" was noticed, became more active. One of these patients tried to escape. In two patients this "overactivity" became a problem from the point of view of nursing care and management. The other side effects were "hot flushes" in 2 subjects, and drowsiness in 3 subjects. The identical twin who received the drug became over-active.

There was no change in blood pressure, in weight, and in white cell blood count. Thus one can conclude that, although Ro 1-9569/12 in the doses given does not bring spectacular "improvement" in chronic schizophrenic patients, it activates these patients and as a result, could make them more accessible to psycho-therapy and group therapy.

[4] Neither the rater nor the nursing staff was aware of the hypothesis. They were looking for overall improvement rather than "overactivity."

SUMMARY

During a pilot study it was found that Ro 1-9569/12 tended to activate chronic schizophrenic patients, although it did not produce marked clinical improvement.

DISCONTINUATION OF TREATMENT WITH ATARACTIC DRUGS [1]

A Preliminary Report

MARTIN GROSS, M.D., IRENE L. HITCHMAN, M.D., WALTER P. REEVES, M.D., JORDAN LAWRENCE, M.S., AND PAULINE C. NEWELL, M.S.[2]

Thousands of patients are yearly released from mental hospitals after successful treatment with ataractic drugs. This preliminary report is designed to answer the following questions: should drug treatment in these patients be continued indefinitely or can it be discontinued without causing a relapse? Can clinical or psychological investigation identify factors to guide the decision?

PROCEDURE

A double blind study was made in the outpatient department of Springfield State Hospital under controlled conditions. Released chronic psychotic patients were continued on medication, generally with the same ataractic drugs they were receiving on leaving the hospital. All patients were observed for a preliminary period of at least 5 months, during which they were seen regularly in clinic visits by a psychiatrist and examined at least twice by a psychologist; their families or careholders were interviewed at least twice by a social worker. Evaluations made during this period served as a base line. Medication was given in unidentifiable capsules or tablets. The drugs used were chlorpromazine, perphenazine, proclorperazine, promazine and reserpine.

At the end of the preliminary period one group, continued under the same regimen, constituted the control group. The rest received the same number of unidentifiable capsules or tablets as before but with decreased drug content. Thus, the amount of drug given was unknown to the patient, to the treating physician, the psychologist and the social worker. Patients were assigned to the two groups at random. They were otherwise treated alike, being seen every 3 or 4 weeks by the psychiatrist. After a period of gradual dose reduction (4 weeks to 5 months—usually 2 months) patients in the experimental group were receiving nothing but placebo.

[1] This investigation was supported in part by research grant #MY-2147 (R-1) from the National Institutes of Health, Public Health Service.

[2] Springfield State Hospital, Sykesville, Md.

Every 3 months all patients were formally evaluated by the psychiatrist and the psychologist, their families interviewed by the social worker. When a patient relapsed, he was taken out of the study and treated with the drug he had previously received if this had been withdrawn, otherwise with whatever modification of treatment was indicated. In some instances patients were returned to the hospital; more often, however, they were restored to their former level of adjustment by resumption (or change) of medication.

This report deals with 90 patients observed for the following periods: 1. All patients, controls and experimental subjects, for at least 5 months; 2. All controls for an additional period of 7 months; 3. All relapsed experimental subjects from the beginning of drug reduction to the time of relapse; 4. All non-relapsed experimental subjects for 7 months from beginning of withdrawal.

Fifty-six patients served as experimental subjects and 34 as controls. Of the total 90 patients, 82 carried hospital diagnoses of schizophrenia (40 paranoid type, 29 catatonic, 13 others), 2 of psychotic depressive reaction and 4 of involutional psychosis. When the experimental period started, the patients had been under medication for various periods; in only 1 patient was this period less than one year; in 66 it was more than 2 years and in 17 more than 3 years.

PRELIMINARY RESULTS

Of 56 experimental subjects, 41 (73%) relapsed within 7 months after start of drug reduction. Seventeen of these relapsed during the period of drug reduction before reaching the placebo stage. Of the 34 control patients, 3 (9%) relapsed. Thus, during the first 7 months, the percentage of relapses in the experimental group was more than 8 times greater than in the control group.

COMMENT

This preliminary report indicates that medication with ataractic drugs should not be discontinued indiscriminately in chronic psychotic patients after their release from hospital. At present we have no data discriminating between those cases in which ataractic drugs can safely be withdrawn and those in which they cannot. (We hope to be more specific about this point in our final report.) The relapse rate was somewhat higher in patients with a diagnosis of catatonic schizophrenia or "depressive psychosis" (of any type), and in those under proclorperazine treatment; somewhat lower in those with a diagnosis of schizophrenia other than paranoid or catatonic types and in those under reserpine treatment. There was no significant difference as to sex, age, length of stay in the community or dosage. Those who lived in the community alone, or in foster care, had a slightly higher relapse rate than those who lived with their families. Long hospitalization did not reduce chances for survival in the community. To the contrary, 4 of the 15 patients who weathered the 7-month period had been in hospital more than 10 years.

Preliminary data seem to indicate that the relapse rate continues at about the same level even after the 7 months covered by this report. Therefore, we shall have to prepare our patients for the necessity of long continued medication. If a drug is to be withdrawn, it should be done gradually and under close supervision which should continue for a prolonged period after withdrawal.

ANEMIA AS A COMPLICATION OF PROCLORPERAZINE THERAPY

AMES FISCHER, M.D., AND NORMAN S. GOTTREICH, M.D.[1]

Estimates of the incidence of phenothiazine agranulocytosis vary from 1 : 1000 to 1 : 150, with the consensus being about 1 : 700. The presence of anemia as a complication is exceedingly rare, and has invariably been part of a pancytopenia.

The following case is reported as an apparently unique complication of pro-

[1] The Langley Porter Neuropsychiatric Institute, San Francisco 22, Calif.

clorperazine (Compazine) administration, since the patient developed a severe anemia without evidence of granulocytic impairment.

Case Report: A 25-year-old girl was hospitalized on February 7, 1958, in an acute psychotic state. During the preceding 3 years she had received reserpine, promazine, and perphenazine with no untoward results.

The patient's physical history was unremarkable, and there had been no previous anemia. The physical and neurological examinations were normal. The initial blood studies showed: Hgb 13.3, RBC 4.25, PCV 42; WBC 11,000 with 60% PMN's. On March 29th the hemoglobin was 15.1 grams, and studies of liver function and post-prandial blood sugar were also normal.

At no time during the hospitalization was there clinical evidence of blood loss. Menses were described as scanty. Dietary intake was adequate.

After admission, the history of medication is as follows: Amobarbital, 0.1 to 0.2 grams h.s., until March 11th; proclorperazine, 180 mgm. daily, begun April 3rd; neostigmine (15 mgm.) and methanesulfonate (Cogentin) (1 mgm.), begun April 24th. Weekly leukocyte counts during the period of proclorperazine therapy ranged from 6500 to 9200.

The patient began to complain of dizziness, weakness, and easy fatigability early in May. On May 16th, 6 weeks after beginning proclorperazine, the RBC count was 2.68 million, the Hgb 8.4 grams, and the PCV 23. Wintrobe indices were: MCV 85.8, MCH 31.3, MCHC 36.5. All drugs were discontinued approximately 7 weeks after they had been started. At that time the PCV was 24 and the van den Bergh test normal. Weekly blood studies were done thereafter, including a reticulocyte count. Several platelet counts were normal, as were the periodic WBC and reticulocyte counts.

Hemoglobin determinations were 7 to 8 grams until mid-July, when they began to rise. On August 12th the hemoglobin was 9.6 grams. Ferrous gluconate, 300 mgm. t.i.d., was begun on August 28th as a diagnostic measure. However, there was no reticulocyte response, and the iron was discontinued on October 17th. On September 26th the hemoglobin was 15.1 grams, and remained normal thereafter.

No bone marrow study was done during the period of the anemia because of the fearful and resistive condition of the patient. However, several special laboratory procedures were performed on July 31st. A red blood cell survival time revealed a normal half-life of 24.5 days. There was no indication of increased destruction of RBC's by the spleen (radioactive spleen-to-liver ratio was normal). The serum iron-binding capacity was normal (402.4 mcg. percent), but the serum iron concentration of 22.65 mcg. percent was markedly low (normal 70-170).

The patient received trifluprομazine (350 mgm. daily) from November 21, 1958 to March 23, 1959, and trifluoperazine (40 mgm. daily) from the latter date until her discharge on August 28, 1959. Both these drugs were accompanied by methanesulfonate, 2 mgm. daily. When discharged she was in excellent health and had a hemoglobin of 14.5 grams.

It would be informative to have had the results of a bone marrow examination. However, the data at hand point most decidedly toward marrow depression, especially since there was no clinical evidence of blood loss, and no reticulocyte response to iron therapy in the presence of a low serum iron concentration. It would be difficult to implicate amobarbital as the offending agent, if only because of the length of time between its use and the appearance of anemia. Neostigmine and methanesulfonate were not given until about a week preceding the symptoms of anemia; moreover, their association with anemias is unknown. Thus, we feel this case to be an unusual toxic complication of proclorperazine therapy.

Summary

1. A case is presented of anemia attributable to proclorperazine, without leukopenia or other abnormality of the peripheral blood.

2. The patient subsequently received courses of trifluprομazine and trifluoperazine without complications.

CASE REPORTS

SUICIDE IN IDENTICAL TWINS

DAVID W. SWANSON, M.D.[1]

Remarkable similarities in behavior have been reported in twins, but there has been only one documented case of suicide in both members(1). The following is a report of concordant behavior in twins, including suicidal attempts (one being successful), occurring during a close interval of time in different circumstances.

From birth until age 25 these twins were not separated. They went everywhere together, received identical scholastic marks, participated in like activities, entered upon military careers together and received all of their promotions on identical dates. Their advancement in the military was very rapid and both were referred to as the finest of non-commissioned officers by their superiors. Direct reference was made to each twin's close attention to details, marked conscientiousness and dependability.

Both were married in their early twenties and had children of approximately the same ages. Twin #1, at age 22 and 24, was hospitalized for complaints of nervousness, anxiousness and "something I couldn't put my finger on." He received electroshock during the initial hospitalization. Twin #2 did not appear influenced by these illnesses, demonstrating jovial, outgoing behavior that had always been more prominent in him than in Twin #1.

At age 28 the twins were separated by differing military assignments. They rarely corresponded and their awareness of each other's activities was indirect and through family correspondence. Their successful army careers continued on different continents, one in Europe and the other in Asia. At age 30, Twin #1, was again hospitalized with complaints of uneasiness, inability to sleep and loss of appetite. He expressed feelings of guilt, unworthiness, with suicidal intent. One month after admission he broke away from attendants and threw himself beneath a heavy military truck, receiving a serious chest injury. He later stated this was a planned effort at suicide, and there was no cause for question as to the sincerity of the gesture.

The patient's wife was aware of her husband's suicidal attempt; but Twin #2 and the remainder of the family, were only informed that he had experienced another "nervous breakdown."

Approximately 4 months after the onset of symptoms in his brother, Twin #2 was hospitalized because of inability to concentrate, loss of appetite, sleeplessness and something he was going to "straighten out himself." He expressed feelings of guilt but seemed improved after a short hospitalization and was released. He was observed by colleagues to become more quiet and intent. Then, unaware of his brother's suicidal action, this twin 3 months later was found dead by self-inflicted strangulation.

Family History: The father, age 51, once threatened suicide by placing a loaded gun to his head. He was regarded as strict with his children and somewhat excessive in wanting them to excel. The mother, age 54, is described as tolerant, kind and understanding. Both twins were close to their mother and felt she best understood them. A successful, well-adjusted brother completes a family group described as close.

Members of the family felt the twins to be identical. Their features, physical dimensions, expressions and responses were strikingly similar. One of the twins commented, "We looked so much alike, I couldn't tell the difference in our picture."

DISCUSSION

Numerous similarities in achievement, behavior and psychopathology are present in these twins. Features frequently concord-

[1] Staff Physician, Illinois State Psychiatric Institute, Chicago, Illinois. Appreciation is expressed to the Surgeon General's Office, United States Army, for their cooperation.

ant in identical twins have been thoroughly discussed from a genetic viewpoint(2, 3, 4, 5). Conclusions from these extensive studies indicate that the basic personality make-up is largely determined by heredity, and that adaptive failure follows a course primarily genetically determined.

Kallman, in a study of 18 identical and 21 fraternal twins, found they were discordant for suicide with but one exception. This single pair of twins known to have been concordant as to suicide killed themselves 4 years apart(6).

Since the frequency of suicide in the general population is one in 10,000(7), and identical twins represent 0.3% of the population(8), the likelihood of chance concordance for suicide is understandably slight. The foregoing is offered as an instance in which sincere suicidal attempts were made during the same interval of time by identical twins, in one twin successfully.

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MULTIPLE TICS

DORIS H. MILMAN, M.D.[1]

Prompted by the article "A Clinical Study of Gilles de la Tourette's Disease in Children" by Eisenberg *et al.* (Am. J. Psychiat., **115**: 8, Feb. 1959) and the exchange of correspondence between Drs. Rapoport and Eisenberg, I am moved to report a long-term experience with a patient with maladie des tics.

In 1950 I saw and treated a boy, then 9 years old, who had been afflicted from the age of 6 years with multiple tics, including bizarre body movements and vocalizations. In early childhood he was hyperkinetic, rocked, and banged his head. At 7 years of age he was thought to have chorea and was treated with fever therapy. At 8 he developed severe asthma. When I saw him at 9 years, he was incessantly grimacing, barking, slapping his face, and twitching his neck, shoulders, trunk, and legs. He compulsively verbalized obscenities and gave evidence of obsessive thinking. He had been withdrawn from school because of his bizarre behavior. His somatic activity was so excessive that he was unable to maintain an adequate caloric intake and was markedly malnourished. An electroencephalogram was normal. Intelligence was in the normal range with evidence of a much higher potential. Projective material pointed in the direction of neurotic development.

I treated the boy with medication (drugs of the amphetamine series) and with weekly psychotherapeutic sessions over a period of 1½ years, with parallel sessions of guidance for the mother. At the age of 11 years 10 months the boy was free of tics, had gained a lot of weight, had no obsessional thoughts, and was attending school. At 13 years he had a religious confirmation without undue reaction.

In February 1959 I received a telephone call from the patient's sister. He had been well through the years, had completed high school, and now, at the age of 18, was in the army. The sister called to tell me that he was being considered for secret intelligence work and to ask if his past history would be a deterrent.

Although many neurotic elements were clearly identifiable in the clinical picture,

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and became better elucidated in the course of therapy, I cannot be sure that this was purely a functional disorder. There was a history of abnormal motility from infancy. On the other hand, his EEG was normal, and he made and maintained to date a complete recovery.

I agree with Dr. Eisenberg that a pooling of experiences with this syndrome would be valuable to us all.

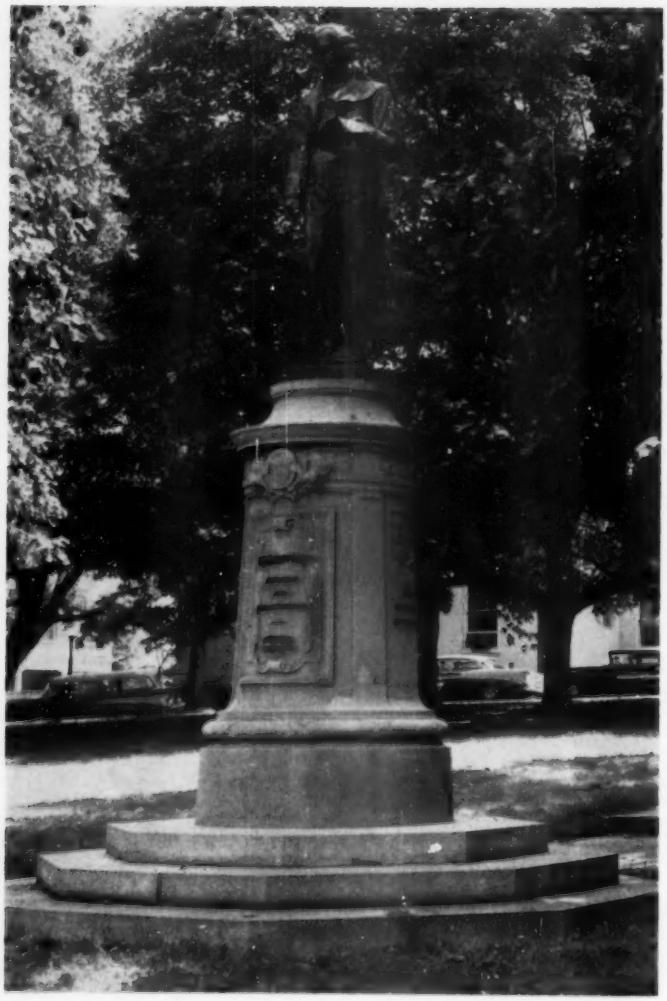
FAITH

The universal opinion was that it was right to compel men to believe what the majority of society had now accepted as the truth and, if they refused, it was right to punish them. No one in the dominating party was heard to raise his voice in behalf of intellectual liberty. The mystery of things above reason was held to be the very cause that they should be accepted by Faith; a singular merit was supposed to appertain to that mental condition in which belief precedes understanding.

—John William Draper, M. D., LL. D.
(History of the Intellectual Development of Europe.
Chapter 10: The European Age of Faith)

I have ministered to the knowledge of the people as far as lay in my power, and I shall continue to do so. The number of public schools has been increased, not only in Italy but in the provinces, and I am turning my whole attention to that higher education which will procure for us capable physicians, architects and expert canal builders; furthermore, as you well know, I have founded the Apollonian and Octavian Library, and I have not neglected to promote the already existing libraries by donations. Yet this kind of solicitude means little to the people; the masses have no desire to be given perception, they want to see strong images whose unequivocal meaning they are able to grasp.

—Hermann Broch
(The Death of Virgil:
Augustus speaks to Virgil)



HISTORICAL NOTES

NOTE ON BENJAMIN RUSH

Of the three statues of physicians (Rush, Gross and Hahnemann) which stand in the Capital City, one is of especial interest to members of the American Psychiatric Association, namely that of Benjamin Rush.

Many Washingtonians are unaware of the fact that the "Patron Saint" of the Association has been thus memorialized. If they know of the existence of the statue, they may wonder why it, raised in honor of the Surgeon General of the Continental Army, should stand, as it does, on the grounds of the old Naval Hospital (now the Bureau of Medicine and Surgery) at 23rd and D Streets, N.W.

In view of the fact that Rush was the first American to write on mental disorders, and that his profile appears on the Seal of our Association, the Editor has thought a note, together with a photograph, to be of sufficient interest to warrant publication in the Journal. The author is greatly indebted to Rear Admiral B. W. Hogan, Surgeon General of the Navy and Honorary Fellow of the American Psychiatric Association, for the data on which this note is based.

In 1896 the American Medical Association participated in the establishment of a Rush Monument Committee under the chairmanship of Dr. Albert L. Gihon, then a Medical Director in the United States Navy, and obtained authority from the Secretary of the Navy to erect a monument "upon the grounds facing the United States Naval Museum of Hygiene." The Army had already authorized the erection of a monument to Dr. Samuel D. Gross, near the Army Medical Museum (7th Street and Independence Avenue, S.W.), a fact mentioned by Doctor Gihon in suggesting the Naval Museum site in view of Rush's early advocacy of hygiene. Thus the interests of the Army and the Navy were balanced!

The committee of the American Medical Association, under the chairmanship of Dr. J. C. Wilson of Philadelphia, through a general appeal for subscriptions, raised the necessary funds (about $15,000) and had a bronze statue (slightly more than life size), designed by "Mr. Perry of New York," executed. Finally, on June 11, 1904, the monument was unveiled and dedicated. Dr. J. H. Musser, President of the American Medical Association, made an address, Dr. J. C. Wilson delivered an eulogy of Rush, and the President of the United States, Theodore Roosevelt, formally accepted the monument as a gift from the medical profession to the Nation. Among the distinguished guests on that occasion were Dr. William Osler, Dr. William H. Welch, Surgeon General Rixey of the Navy, Surgeon General Wyman of the Marine Hospital Service, Sir Frederick Treves, Dr. Frank Billings, and Dr. H. D. Holton.

The monument stands in a park, on an eminence just north of the original building of the U. S. Naval Hospital, on a base of granite, the base and effigy totalling about 17 feet. The front panel bears the inscription "Benjamin Rush, Physician and and Philanthropist, 1745-1813." Proceeding clockwise, the next inscriptions are "Studium Sine Calamo Somnium" (Study without a pen is folly); "The First American Alienist"; "Signer of the Declaration of Independence."

As the photograph indicates, the monument is a worthy memorial to a great physician and patriot and the father of American psychiatry.

Winfred Overholser, M.D.,
Washington, D. C.

COMMENTS

BRAIN AND PERSONALITY

The year 1959 was the centennial of the publication of Darwin's *Origin of Species*. All over the world learned societies have marked the event with conferences on evolution. Knowledge of the evolution of the brain has advanced in the recent decades, and physicians interested in brain and mind can learn much from the report of these meetings.

Brain size is too often emphasized as important for intellectual capacity. Of course, a certain minimum size is necessary to include all the nerve cells and fibres necessary for the processes of learning and adaptation; below that minimum there is functional defect. Normal brains of *Homo sapiens* vary from about 1000 to 2000 grams. The brain of Anatole France weighed only 1017 grams, and that of Bismark weighed 1807. In any one species, size of brain varies directly with size of body; man has from 230 to 250 grams of brain per foot of his length. But between species relative size of brain is of interest only because the weight of the various parts of the brain appear to be positively related to the importance and complexity of the functions they control. The relation of brain weight to the total weight of the body is too variable to be significant. Compared to body weight, the brain of a Japanese mouse is over twice as big as that of a man!

The development of a head-ganglion in the nervous system had been going on for many millions of years before a vertebrate developed a brain with even a primitive resemblance to the brain of a mammal. Paleontology gives evidence by endocranial casts that a reptilian ancestor of present day mammals had fore-brain, mid-brain, cerebellum and medulla arranged in a form resembling that of modern reptiles. This progenitor of ours lived about 200 million years ago and the first primate probably appeared about 60 million years ago. It took all this time to evolve the brain that was to become human about half a million years ago.

But, as Rüger said to Tilly Edinger,[1] it is impossible for one to grasp such figures, so he translated them into terms of one year: There has been life on this planet for about 2,000 million years; if one represents this as twelve months, fish developed in October, reptiles in early November, mammals in late November, and man at eleven-thirty on the night on December 31st! In other words, man has existed for only ½ an hour according to this scale. With the vertebrate brain evolving since October, one cannot expect much structural evolution to have taken place in the last half hour of December.

The human brain had already attained its present state of anatomical complexity and functional potential in the Stone Age, some 50 thousand years ago. The evidence for this is found in paleolithic skulls and artefacts. The evidence from ancient history indicates that men like Pythagoras in the sixth century B.C. and Plato in the third, had brains just as good as present day savants. In fact the very formation of the first language was a constructive intellectual feat of the first order, and this was accomplished long before recorded history began. The fact that neolithic man did not produce an atomic bomb or write *The Origin of Species* was not because he did not have the brain, but because the experience and culture of a few thousand years was needed before man could accumulate the data for such intellectual feats. It is even probable that the functional potential of the human brain has never been fully used, the limit has never been reached. Occasional individuals have perhaps approached it. They are scattered in time all over the span of recorded history, and the earliest of them seem to have been about as superior to common man, as the latest. One might ask how it happened that such a marvelous instrument as the brain was developed so long before it could be fully exploited. The

[1] Personal communication.

answer is that it takes long training to use any instrument up to capacity. Many organs of many vertebrates have reached an evolutionary development which surpassed environmental needs.

The rapid civilization that has taken place during the known history of man is due to social evolution, not to anatomical evolution. When man began to master his environment he set aside the laws of natural selections. The "fittest" was no longer the best adapted to environment, but the one who circumvented the environment and changed it to his advantage. With environmental pressure removed "natural" selection has stopped changing man's brain and cultural selection has exploited the brain with extraordinary speed and success. The resulting behavior patterns are not transmissible, but extremely effective in dividing the species of man into many differing groups.

All this indicates that *Homo sapiens*, in all his races, has an essentially similar brain. Given an equal chance for education the young of any race can equal in intellectual capacity that of any other. On leaving Patagonia, Darwin wrote in his diary of the voyage of H.M.S. "Beagle":

"It was quite melancholy leaving our Fuegians amongst their barbarous countrymen—In contradiction of what has often been stated, three years has been sufficient to change savages into, as far as habits go, complete and voluntary Europeans."

Stanley Cobb

HUMAN BETTERMENT

There are societies and organizations galore whose activities are concerned with human betterment *in our day*, and whose existence bears witness to the urge that is inherent in so many of us to do something to help our fellows. There is a large body of good intention, backed by tradition and culture, and supported by wealth, whether of the individual or of the state, available for social hygiene. The question arises, is all this expenditure of good endeavor directed into the channels which are calculated to produce the most fundamental, and the most enduring, benefits? I do not think that they are. This does not mean that schemes for social hygiene are intrinsically unhelpful, still less does it mean that they should not be encouraged. All it means is that, in the view of the eugenist—a view which I share with utter conviction—the economic advantages, using the term in its widest sense, lie with efforts made towards racial betterment rather than with social service in a particular generation.

—Lord Horder

PHILANTHROPY

Have not hosts of intelligent and highly educated men and women—penologists, sociologists, psychologists, psychiatrists, jurists, and sheer philanthropists—labored at prison reform and refined the treatment of the delinquent until it may be said that the convicted felon receives more social consideration than the law-abiding working man? That would be a question which would not justify an unequivocal answer on the part of counsel for the defence.

—Earnest A. Hooton,
Former Professor of Anthropology,
Harvard University.

CORRESPONDENCE

INTRAVENOUS PENTOTHAL WITH ECT

Editor, THE AMERICAN JOURNAL OF PSYCHIATRY:

SIR: The question of using intravenous Sodium Pentothal in electroshock therapy when Anectine is used to prevent the traumatic effect of the convulsive movement, is still controversial. In the experience of the writer, its use is not necessary if, following the injection of Anectine, a short prelimary shock is given. This is found to be efficient in eliminating anxiety and creating an amnesia for the whole treatment.

The method is as follows: The patient is placed on the bed; the current is turned on. If Reiter's Molac No. 2 is being used, all that is necessary is to give the Anectine, then by pressing the button, give the shock as prescribed below. If Reiter's cerebral stimulator is used, the current is turned on with the lower right hand button in the "sample" position. The current is set at the maximum. The shock is given by momentarily switching the lower right hand button to "treat," and then switching again to "sample."

After Anectine is administered, there is a pause of one or two seconds, then the preliminary, "anesthetic" shock is given. If the Molac machine is used, the button is pressed for a period of one second; with the cerebral stimulator, approximately two seconds. This produces a degree of unconsciousness. After 10 to 12 seconds the treatment shock is administered in the usual manner.

Occasionally, with the initial shock, a patient may cry out, fling his arms about, or half raise himself from the bed. If left alone, this is followed by subsidence into the semiconscious state, in which the patient lies quietly, breathing normally, not responding to demands, *etc.* Most patients react to the preliminary shock by immobility and semiconsciousness.

The rationale of waiting for a longer period after Anectine is given is not clear. The necessity for fibrillation to take place, thus prolonging the period after Anectine, may initiate some anxiety, and in the opinion of the writer, does not create as complete an anesthesia nor amnesia. Some patients, not all, recall the anxiety and may complain of having "felt" the shock. This may account for the need of using intravenous pentothal. Eliminating intravenous Pentothal is perhaps of not too great importance, except in uncooperative and disturbed patients. However, its use does add some additional respiratory risk that can be avoided by the procedure outlined.

Walter A. Thompson, M.D.,
Clinical Director,
Pinewood, Katonah, N. Y.

PROBLEMS OF PROGRAM ANALYSIS IN MENTAL HEALTH RESEARCH

Editor, THE AMERICAN JOURNAL OF PSYCHIATRY:

SIR: The American Journal of Psychiatry for October, 1959 (Vol. 116, No. 4), carried a "Comment" by Charles E. Goshen, M.D., titled "Interdisciplinary Trends in Mental Hygiene Research and Training." Dr. Goshen reports his classification (by methods used and by professional specialties of principal investigators) of 247 research grant proposals in the field of mental health receiving U. S. Public Health Service support in December 1958.

The erroneous impression might be gained from Dr. Goshen's article that his break-downs are based on the *total* number of grants active in December 1958. It should be made clear that the mental health research grants described by Dr. Goshen were less than one third of those receiving U. S. Public Health Service support at that time. While it is difficult, in retrospect, to

identify the exact number of active grants at any point in time, the approximate number for the month of December, 1958, was 825; analysis of the entire body of data might yield quite different results. Furthermore, Dr. Goshen's data were derived from sources other than the complete files at the National Institute of Mental Health.

To a degree, any general break-down of the content of a large research program must inevitably result in arbitrary categories with some considerable overlap among them. Thus, for example, Dr. Goshen's 21-way classification by *methods used* includes the following: "psychological testing," "psychotherapy," "psychopathology." Clearly, these categories do not comfortably belong within a single dimension; only one of them (the first) can be regarded as a method. More important, a number of studies may have all 3 ingredients—for example, a study of the interaction between therapist and patient, in which a battery of psychological tests is used as a method to measure the variables under investigation. Does such a study belong under "psychological testing" or "psychotherapy" or "psychopathology?" The decision can be dangerously arbitrary.

Earlier this year, the Research Grants and Fellowships Branch of NIMH initiated a detailed analysis of the entire program of research under its sponsorship which, it is hoped, will overcome many of the difficulties inherent in a global, "one-shot" classification scheme. A large-scale coding program is under way through which detailed data about each project are being extracted and stored for analysis via electronic machine methods. By recording hundreds of items of information about the content and methodology of each project, it will be possible later to sort and combine various "bits" of data in ways permitting a variety of analyses of the overall program. The initial body of project data now being codified are all those which received NIMH support during the fiscal year 1959.

Philip Sapir, Chief,
Research Grants and Fellowships Branch,
National Institute of Mental Health,
Bethesda, Md.

REPLY TO THE FOREGOING

Editor, THE AMERICAN JOURNAL OF PSYCHIATRY:

SIR: I have recently had occasion to speak with Julius Segal, Ph.D., who has begun the analysis of the NIMH data which is referred to in Dr. Sapir's comment. My note in the Oct. 1959 issue of the Journal was a preview of this analysis, as interpreted by *a* psychiatrist. When the NIMH report is completed it will most likely represent a different type of interpretation, and this will probably be of the sort which could be most appropriately called "interdisciplinary." It will undoubtedly be much more sophisticated and impressive than my feeble sample. Let us hope that it will also be more accurate. The much greater investment in funds and personnel should make this hope a certainty.

Charles E. Goshen, M.D.,
Bethesda, Md.

SENSORY DEPRIVATION

Editor, THE AMERICAN JOURNAL OF PSYCHIATRY:

SIR: I am writing to you in connection with what appeared as a "scientific negligence" in the otherwise excellent article of Dr. Rosenzweig on "Sensory Deprivation and Schizophrenia" in the October issue of the JOURNAL.

Dr. Rosenzweig seems to have been unaware of the first studies on so-called sensory deprivation in mental patients, which were realized at the Allan Memorial Institute under my direction in 1954. The first of these studies was presented at the Society of Biological Psychiatry in 1955 and subsequently published in 1956 in Dis.

Nerv. Syst., 27 : 117. This was followed by three other reports, two of which have been published : Can. J. Psychiat., 1 : 60, 1956 and Dis. Nerv. Syst., 18 : No. 8, 1957. One report was presented at Symposium of Sensory Deprivation Harvard Med. School in June 1958.

The main reason for my bringing this matter forward is that several of the U. S. authors, who were well aware of the experiments at the Allan Memorial Institute have neglected to mention in their published reports the above mentioned studies which had preceded their experiments and had tackled the problem from a different angle and for a different purpose.

H. Azima, M.D.,
Assistant Professor of Psychiatry,
Allan Memorial Institute,
Montreal, P. Q.

REPLY TO THE FOREGOING

Editor, THE AMERICAN JOURNAL OF PSYCHIATRY :

SIR : Thank you for sending Dr. Azima's letter.

I am of course familiar with the important work of Dr. Azima. I regret that Dr. Azima feels his work has been neglected in the United States, but I do not plead guilty to "negligence." There was no attempt in my paper to make a complete review of all work done on sensory deprivation. Had this been the case, many other authors would also have claim to Dr. Azima's complaint.

The intent of that portion of my paper given to a review of experimental literature was rather to cite some of those experiments in which symptoms characteristic of schizophrenia were induced by sensory deprivation in otherwise "normal" people. Dr. Azima, on the other hand, has been using perceptual isolation as a therapeutic technique with mental patients who already demonstrate these symptoms to some degree. As Dr. Azima may recall, I tried to point out this distinction during the discussion of his fine paper at the Harvard Symposium.

I trust that the publication of the references cited by Dr. Azima in his letter will enable many more people to become acquainted with Dr. Azima's worthwhile efforts in this field, and thus perhaps correct what Dr. Azima considers to be an injustice.

Norman Rosenzweig, M.D.,
Assistant Professor of Psychiatry,
University of Michigan,
Ann Arbor.

BASIS OF ETHICS

Out of one hundred human beings fifty-one will be found in the long run on the side of the right.

—OLIVER WENDELL HOLMES

NEWS AND NOTES

Alfred Korzybski Memorial Lecture.—The ninth annual memorial lecture sponsored by the Institute of General Semantics was given by Warren S. McCulloch at the Plaza Hotel, New York, March 12, 1960. Dr. McCulloch is at the Research Laboratory of Electronics of the Massachusetts Institute of Technology and was formerly at the College of Medicine, University of Illinois.

International Conference on General Semantics, 1960.—The conference will be held July 31-August 4, 1960 at the University of Hawaii, Honolulu. Information may be obtained from the Institute of General Semantics, Lakeville, Conn.

Second International Congress of Group Psychotherapy.—The papers given at the Congress which was held in Zurich, August 29-31, 1957 have been published by S. Karger A.G., Basel, Switzerland. There are contributions by well-known representatives of various therapeutical orientations as well as a brief outline of the first Congress held in Toronto, in 1954. The papers are in French, English or German. The cost of the volume (pp. 596) is Sfr. 85.

Third World Congress of Psychiatry, First Announcement.—The Congress will be held June 4-10, 1961 in Montreal, Canada under the auspices of the Canadian Psychiatric Association and McGill University. Those wishing to present papers should communicate with the General Secretary, Dr. Charles A. Roberts, Allan Memorial Institute, 1025 Pine Ave. W., Montreal 2, P.Q., Canada, by September 1, 1960. The official languages of the Congress are English, French, German and Spanish. The executive committee are : D. Ewen Cameron, M.D., Chairman ; Lucien La Rue, M.D., Vice-Chairman ; A. E. Moll, M.D., Deputy Vice-Chairman ; Baruch Silverman, M.D., Chairman, Arrangements Committee ; C. A. Roberts, M.D., General Secretary ; Camille Laurin, M.D., Treasurer. The second announcement giving detailed information will be mailed to those interested in September, 1960.

University of Chicago Rorschach Seminars.—The Department of Psychology, University of Chicago presents two Rorschach Seminars, July 1960 :

I. *The Foundations.* Basic problems of administration. Processing the associations. Psychologic significance of the test variables. The whole personality in the Rorschach test. July 5-9, 1960.

II. *Advanced Clinical Intepretation.* Overt symptoms and their underlying source traits as leads to diagnostic differentiation. The problems of differentiation : neurosis or schizophrenia ; organic or psychodynamic reaction patterns. Schizophrenia in children. Implications for treatment. July 11-15, 1960.

Doctor S. J. Beck will conduct both seminars. For information write to : Rorschach Workshops, Department of Psychology, University of Chicago, Chicago 37, Ill.

The Fifth International Poliomyelitis Conference.—The conference will be held in Copenhagen, Denmark, July 26-28, 1960 under the sponsorship of the National Foundation and the Danish Infantile Paralysis Association. The general chairman is Dr. E. Juel Henningsen, Deputy Minister of Health of Denmark.

Chief attention during this conference will be given to the prevention of poliomyelitis. The opening section will deal with overall viruses 1960. The second section will be a discussion of the present status of the killed or inactivated virus vaccines and the third section will deal with all aspects of the live attenuated virus vaccine.

Further information may be obtained by writing to Mr. Stanley E. Henwood, Executive Secretary, International Poliomyelitis Congress, 120 Broadway, New York 5, N. Y.

Austrian Medical Society for Psychotherapy.—On January 26, 1960, the Society

held its 10th anniversary meeting in the auditorium of the Vienna Polyclinic. Professor Dr. Viktor E. Frankl was elected to the presidency.

In the following scientific session, an address on "Logotherapy" was given by Dr. Donald F. Tweedie, chairman of the psychological department of Gordon College, Mass. Professor Tweedie is spending a sabbatical year at the Vienna Polyclinic where he is studying the psychotherapeutic method developed there by Professor Frankl.

Dr. Frederick H. Packard.—A former Medical Superintendent of McLean Hospital, Dr. Packard died in July 1958. He had been a member of the McLean staff for fifty-two years.

Born in 1875 he was graduated from Harvard University in both arts and medicine, going to McLean directly after his internship. During this long period of service he had one academic year's leave of absence for study at the University of Munich, after which he served for a period as pathologist at McLean. In 1919 he was appointed Medical Superintendent, and when he retired ten years later he was named Superintendent Emeritus.

University of Virginia School of Medicine Lectures.—Under the sponsorship of the Department of Neurology and Psychiatry in the medical school auditorium:

On February 26 at 5 p.m. Dr. J. H. Quastel, Professor of Biochemistry at McGill University and Director of McGill-M.G.H. Research Institute in Montreal, will talk on "Biochemical Aspects of the Brain in Health and Disease."

On March 28 at 8 p.m. Dr. Joel Elkes, Chief of Psychopharmacology Research Center, National Institutes of Mental Health, will talk on "Psychopharmacology: Present Day Problems and Future Trends."

A. E. Bennett Award.— The Society of Biological Psychiatry offers an annual award made possible by the A. E. Bennett Neuropsychiatric Research Foundation. The award will consist of $500, part of which is to be used for traveling expenses to the meeting. It will preferably be given to a youngish investigator and not necessarily a member of the Society of Biological Psychiatry, for work recently accomplished and not published. The paper will be read as part of the program of the annual meeting of the Society and will be published with the other papers read at that meeting in the book: *Biological Psychiatry*, Volume III. The honorarium will be awarded at the annual banquet. Please submit papers in quadruplicate to Harold E. Himwich, M.D., Chairman, Committee of Award, Galesburg State Research Hospital, Galesburg, Illinois. Deadline for manuscripts is April 30, 1960.

American Society of Group Psychotherapy.—The 19th annual meeting of the Society will be held at the Barbizon Plaza Hotel, New York City, from April 27 to 29, 1960. Kindly mail papers to P.O. Box 311, Beacon, N. Y.

Lindau Psychotherapy Week.—The 10th Psychotherapy Week at Lindau (B) under the direction of Dr. Helmut Stolze will be held May 2-7. The main theme will be group therapy. Films illustrating psychotherapy will also be shown. Training demonstrations will be given during the following week, May 7-14.

For information address the Sekretariat der Lindaur Psychotherapiewoche, Munchen 2, Dienerstr. 17.

Mental Defect Due to Phenylketonuria.—Dr. Paul H. Hoch, Commissioner of Mental Hygiene, announced that New York State will provide supplies of the necessary diet for patients requiring financial assistance. The diet will be supplied for all children up to the age of 5 suffering from the disease who are expected to respond to the treatment. An estimated 20 new cases of this rare form of mental deficiency occur each year in New York State.

The operation of the pilot program, believed to be the first state project of its kind in the country, will be centered at Letchworth Village, Thiells, under the direction of Dr. George A. Jervis. All cases will be reviewed in the project center, but

the general medical supervision of the patient will be in the hands of the family physician. Supporting laboratory services will be provided wherever requested.

Information on the service may be obtained from Dr. Jervis at Letchworth Village, Thiells, N. Y.

JOINT INFORMATION SERVICE PUBLICATION.—*Fifteen Indices* has been issued by the Joint Information Service of the APA and NAMH. The tables indicate how all the states stand in relation to one another according to a mental health index or an index concerned with state and local government finances. Bar graphs for each state and the District of Columbia indicate where each state stands in relation to the U. S. average of the 15 tables. There are comparative figures for 1956 and 1958. This aid in reviewing state and local mental health and hospital programs is available at $2.00 per copy from the APH-NAMH Joint Information Service, 1700 Eighteenth St., N.W., Washington 9, D. C.

PSYCHOLOGICAL PROBLEMS OF MAN IN SPACE FLIGHT.—An article bearing this title by George A. Peters of the Douglas Aircraft Company, Inc., appeared in the March, 1960 issue of "Astronautics." In it he discusses some of the psycho-social-sexual problems which may occur in manned space flight and points out that careful selection of crew members is necessary because of the severe problems which may be caused by isolation, or close confinement with minimal environmental variety or activity or close confinement requiring constant vigilance or activity.

The article suggests that a psychiatrist should be included in the crew because of the psychological problems arising and to provide medical care in case of illness or accident. In space flights which are of a scientific nature, the psychiatrist could also be engaged in research.

COLUMBIA UNIVERSITY DEPARTMENT OF PSYCHIATRY.—John Bowlby, M.D., Deputy President, British Psychoanalytical Society, and Director, Department for Children and Parents, Tavistock Clinic, London, will deliver the Sandor Rado Lectures at the Columbia University Psychoanalytic Clinic on April 29 and 30. His titles : Anxiety and Grief in Infancy and Some Problems of Mourning.

DR. JONES APPOINTED SUPERINTENDENT OF BUTLER HEALTH CENTER.—The appointment of Dr. Charles H. Jones, Superintendent of Northern State Hospital, Sedro Woolley, Washington, as Superintendent of the Butler Health Centre, Providence, Rhode Island was announced February 23 by Mr. Alfred H. Joslim, President of the Board of Trustees. Dr. Jones will assume his new post May 13, after having served as Superintendent of Northern State Hospital for more than ten years.

LAUREL (MD.) SANITARIUM FIFTY-FIFTH ANNIVERSARY.—The establishment of the Laurel Sanitarium fifty-five years ago recalls one of the "wonder cures" that have lived their day and passed away. In fact the birth of the sanitarium and the death of the "Keeley Cure" for alcoholism, alias the "Gold Cure," coincided, and Dr. Jesse Coggins, founder of the sanitarium was able to purchase at a bargain price the near-by Keeley Institutes, a summer hotel accommodating some 60 guests, and transport it bodily with all its equipment to his property, where it forms an essential unit in his institution.

Originally operating it for all types of psychiatric illness, Dr. Coggins has of late years restricted admissions to his hospital to women requiring geriatric care and treatment. It is the only facility of its kind in the State of Maryland.

UNIVERSITY OF VIRGINIA SECOND BEHAVIORAL SCIENCE SYMPOSIUM.—The Symposium at the University of Virginia will be held April 4 and 5, 1960. Under the chairmanship of Arthur J. Bachrach, it will be on "The Lawful Nature of Behavior," and will include papers by B. F. Skinner, Donald B. Lindsley, Ernest R. Hilgard, William A. Hunt and Carl Pfaffman. Information regarding registration, housing, and fees may be obtained from Mrs. Katherine Tiffany, Secretary, Division of Behavioral Science,

University of Virginia School of Medicine, Charlottesville, Va.

Congres de Psychiatrie et de Neurologie de Langue Francaise.—The congress will hold its fifty-eighth session at Lille, France, from June 27 to July 2, 1960. The division of psychiatry will consider "New Clinical and Biological Studies in Discordant Syndromes" (P. Abely and P. Delaville, Paris), the neurological division, "From Somesthesia to Somatognosis" (F. Lhermitte, Paris) and the therapeutic division, "The Utilization of Analytic Data in Current Psychotherapy" (M. Eck, Paris). Information may be obtained from Docteur Paul Cossa, Le Secretarie General, 29, Boulevard Victor-Hugo, Nice, France.

First Edition of Medical Directory of South Africa.—The printing of the first edition of this directory is nearing completion. Compiled with the co-operation of the Medical Association of South Africa, it contains detailed professional biographies and provides the only compendium of medical practice—administration, schools, research, and hospitals—in South Africa. The retail price is $7.50 plus postage. As the Directory is being printed to order, those desiring copies are requested to order in advance from Dr. B. Crowhurst Archer, Editor, Knox Printing Company (Pty.) Ltd., P.O. Box 1509, 30-36 Baker Street Durban, Natal, South Africa.

International Congress of Individual Psychology.—The congress will take place from August 28 to September 1, 1960, at the Neuropsychiatric Clinic in Vienna. The theme of discussion will be "Theoretical and Practical Implications of Social Interest." Professor Dr. Hans Hoff, Chairman of the Department of Neuropsychiatry of the Vienna University, will be honorary president of the Congress; and Dr. Alexandra Adler, New York, President of the International Society for Individual Psychology, will preside. For further information address Dr. Walter Spiel, International Congress for Individual Psychology, Neuropsychiatric Clinic, Lazarettgasse 14, Vienna 9, Austria.

Second United Nations Congress on the Prevention of Crime and the Treatment of Offenders.—This international congress will be held at Church House and Carlton House, London, England, from August 8 to 20, 1960. One of the topics for discussion will be "New Forms of Juvenile Delinquency: their origin, Prevention and Treatment." The government of the United Kingdom, acting as host, will sponsor an exhibition, visits to institutions, and lectures. Participants will include members officially appointed by their governments, representatives of specialized agencies of the United Nations, and individuals having a direct interest in the prevention of crime. Applications for membership should be made not later than April 15, 1960. For information write to the Chief, Section of Social Defence, United Nations, New York 17, N. Y.

The Academy of Psychoanalysis.—The annual meeting of the Academy will be held May 7-8, 1960 at the Hotel Claridge, Atlantic City, N. J. There will be morning and afternoon sessions on both days. Inquiries many be addressed to Joseph H. Merin, M.D., Secretary, The Academy of Psychoanalysis, 125 East 65 Street, New York 21, N. Y.

Dear Member: The 1960 convention provides new air-conditioned—sound proof meeting rooms plus speeded up registration procedures and smoother direction. Name "Talent" features wordless banquet for entertainment. Ladies arranging fashion show—brunch and special luncheon. Multitude of modern hotel accommodations near by. Innovations in program make Atlantic City a must.

THE AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY, INC.—The following candidates were certified by this Board after examination in New York, N. Y., December 14 and 15, 1959.

PSYCHIATRY

Abeles, Walter, Warner House, 67-41 Burns St., Forest Hills 75, N. Y.
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"ARCHAIC AND MISCREANT BELIEFS"

Worry about the problems of sin, of the origin of evil, and of predestination is, as Emerson said, evidence of "the soul's mumps, and measles, and whooping-cough." People who worry about these questions need to consult a physician, and not a theologian, unless he happens to be one of that small group of clergymen who clearly recognize the biological significance of religious problems.

—Stewart Paton
(Signs of Sanity, 1922)

PROGRESS

Progress is not an illigitimate word, but it is logically evident that it is illigitimate for us. It is a sacred word, a word that could only rightly be used by rigid believers and in ages of faith.

—G. K. Chesterton

OFFICIAL REPORTS

SUMMARY REPORT OF THE FIRST INTERNATIONAL MEDICAL CONFERENCE ON MENTAL RETARDATION

Dedicated to the purpose of appraising problems in the field of mental retardation, the Conference, held at Portland, Me. from July 27 to 31, 1959, marked the first of its type to be held in the world. As evidence of the widespread interest, representatives from 33 foreign countries and from 40 states of this country, attended. Although the Conference was primarily directed to physicians, the final session was opened to related professions. Total Conference attendance was a little over 600. Wives and families registering for social activities with the Women's Auxiliary of the local medical association, which served as Hospitality Committee for the Conference, totaled 103.

In addition to pointing up the need for continued research in the field of mental deficiency, one of the principal aims of the Conference was to continue the work begun in this direction through a permanent organization. To this end, a small group of physicians representing leading countries of the world met as a Steering Committee, chaired by H. Bair, M.D., Parsons, Kan., U.S.A., early in the Conference period, to consider the next step. After thorough deliberation, a permanent committee was organized and the decision made to hold the Second International Medical Confererce on Mental Retardation in Vienna, Austria, in 1961. Dr. K. Kundratitz of that city was named chairman. Other committee members appointed were: J. D. Spillane, M.D., Cardiff, Wales; H. Bickel, M.D., Marburg, Germany; H. Asperger, M.D., Innsbruck, Austria; T. Arneus, M.D., Stockholm, Sweden; S. Nielson, M.D., Copenhagen, Denmark; G. Frontali, M.D., Rome, Italy; F. Groer, M.D., Warsaw, Poland; A. Minkowski, M.D., Paris, France; A. Chattas, M.D., Cordoba, Argentina; P. Bowman, M.D., and H. Mautner, M.D., Pownal, Me., U.S.A.

The Conference program, designed around the daily presentation of scientific papers in plenary sessions, followed by a discussion period, featured 35 speakers. Summary highlights of these papers included: Reports about pathological findings in the brain of mentally retarded patients (P. Yakovlev); malformations produced in animals by abnormal food, poisons, or other types of damage (J. Warkany); inborn metabolic errors explained by abnormalities in the enzyme function (D. Y. Y. Hsia); report on experiments concerning autonomic regulation in the brain (E. Gellhorn); pathological findings in birth trauma and asphyxia (P. Schwartz); relation of breathing in the newborn to the acid base equilibrium and its importance for asphyxia (L. James); observations in differences of metabolism and oxygen utilization in animals before and after birth (W. Himwich); sequels of infectious diseases of the central nervous system in respect to mental development (H. Asperger); prenatal infections and other results in mental development and malformation (J. Sutter); a report on the present knowledge of metabolism and the amino acids and the diseases which are now considered to be related to abnormalities in the amino acid metabolism (R. Paine); a survey of the chemical background of lipid thesauroses including gargoylism (P. Diezel); a report on metabolism of copper, iron, and lead and about related diseases with mental deterioration (J. Cuming); erythroblastosis as base of mental retardation (W. Zuelzer); recent findings of chromosomal abnormalities in mentally retarded persons (P. Polani); childhood schizophrenia (L. Bender); mongolism (C. Benda); and many others.

Scientific exhibits portrayed the subjects of phenylketonuria (Centerwall); a simple method for the detection of amino-aciduria (Ghadimi and Schwachman); dietary treatment of phenylketonuria (Paine); some rare types of mental deficiency (Pineland Hospital and Training Center); toxoplasmosis (Barr); atarax in the treatment

of mentally retarded children (Carter); abnormalities in the region of the foramen magnum (Spillane); acrocephalo syndactyly (Holzer); a significant collection of publications on many aspects of mental deficiency. These, together with several commercial exhibits, attracted the attention of a large group of delegates during the visiting periods accorded for this purpose at each session.

Daily film sessions averaged an attendance of some 100 delegates.

The Conference closed on the following note: the unanimous adoption by the delegates of a resolution to "recommend to all Governors of the World that sufficient funds be provided in their annual budgets for improvement and deepening of our present knowledge of Mental Retardation, and to further its medical treatment, its social and educational needs, its research, and to create a better understanding for the psychological, social, economic, legal and medical needs of the mentally retarded individual."

The Conference proceedings, including the printing in full of the scientific papers presented as well as the ensuing discussions on these, will be published and should be available in the spring of 1960.

Howard V. Bair, M.D.,
Parsons, Kansas.

RELATIONS BETWEEN PSYCHOLOGY AND PSYCHIATRY

The report which follows has been authorized for publication by the Executive Committee of the American Psychiatric Association at its meeting of January 5, 1960 in New York City.

It will also be published in *The American Psychologist*, the official journal of the American Psychological Association. Since the meeting referred to here, we have held another joint meeting of these two committees to discuss further ways of establishing and maintaining liaison between our two professions at a dignified level as colleagues in allied scientific disciplines.

Joel S. Handler, M.D.,
Chairman, Committee on
Relations with Psychology

JOINT REPORT ON RELATIONS BETWEEN PSYCHOLOGY AND PSYCHIATRY

The new Committee on Relations with Psychology of the American Psychiatric Association met in Chicago on May 2-3, 1959 with the Committee on Relations with the American Psychiatric Association of the American Psychological Association. In view of the recent history of strained relations between the two parent groups, the atmosphere of this Chicago meeting was at first somewhat contentious and argumentative.

The psychologists were informed for the first time of the events leading up to the 1957 action of the Council of the American Psychiatric Association, upon recommendation of the Assembly of District Branches, to rescind the agreement between the two parent groups that certification was an acceptable form of legislation for psychology. The psychiatrists were informed of the extended history that led to the action of the Council of Representatives of the American Psychological Association at its September 1958 meeting, and published in the December 1958 issue of the *American Psychologist*.

Members of both committees felt that the Newsletter report of the American Psychiatric Association under date of December 14, 1958 had not clearly interpreted or defined the areas of agreement and disagreement between the two parent groups. This present report is intended to clarify the issues, representing as it does a joint report of the two committees.

The members of both committees felt it essential to re-establish more effective communication in order to avoid a continued

public quarrel that might eventually discredit both parent groups. The public need is such and the professional manpower problem is such that both parent groups cannot fail to recognize the legitimate interests of society as a third party in their negotiations and in their interprofessional relations.

Some part of the confusion and conflict appears to derive from a real ignorance on the part of psychiatrists and psychologists of the functions, roles, and activities in each other's fields. A few statistics about the memberships of the parent groups are relevant in clearing up this area of misunderstanding.

For example, the American Psychological Association presently numbers somewhat over 17,000 members, of whom 55% presently hold the Ph.D. degree; among the remaining 45% are many who are in the process of completing this earned degree. Slightly under one-half of this total membership find their primary employment in college or university appointments; an additional 35 to 40% are employed by the Federal Government, state or local governments, or by non-profit organizations including private hospitals and clinics. It is estimated that less than 5% would be found to be engaged in full-time private practice. The field of clinical psychology is the specialized interest of a large number engaged primarily in institutional employment. It is not known what percentage are in part-time private practice of psychotherapy.

The American Psychiatric Association has 10,500 members. A statistical survey of 10% of the membership this year shows that 63% treat private patients. Of this number, 14% list no other professional activity, but 40% who say they are in "full-time" practice do hold academic or clinic or consultative positions of a service nature, and 3% see only occasional consultations. Sixteen per cent of the total membership work solely in hospitals, 13% engaging exclusively in public hospital work, but actually 30% of the members do some work in public hospitals. One third of the membership hold academic appointments; 25% work in outpatient clinics or social agencies; although only 3% do so on an exclusive basis. During the years 1956 to 1959, the membership has increased 21% while the population increase per member has been 17%.

To highlight the discussions the issues covered at this joint meeting appear below in numbered form:

1. Regardless of the recent history of interprofessional relations, the basic social issues remain clear to the members of both committees; these social issues are the problems of collaboration and supervision between psychiatry and psychology in research, in graduate and professional education, in psychotherapy, and in practice of the respective professional specialties, whether this practice be private, group or institutional. These are the problems which must be solved with dignity and with integrity for the members of both groups and for the society which is served by both groups.

2. There was considerable discussion of the fact that in practice, under the duress of extremely heavy case loads, neither psychiatry nor psychology has always done an adequate job of supervision and training. Because of the pressure and the need for psychotherapy some individuals with less than adequate training are nevertheless encouraged to enter private practice prematurely. Instances were cited where psychiatrists too were deemed responsible for encouraging some psychologists to do this, and failing to provide adequate collaboration or supervision to meet the standards of either parent organization. Several psychologists felt that if there was more of a trend to private practice by their group it was of concern to them because it might vitiate their traditional academic and research position. Yet both groups recognized that there is a public demand for more service which must be met. There was some discussion about the variable quality of training in psychotherapy of both psychiatrists and psychologists, and further of the dearth of published data on the supervisory process for either group. Here was an area where further collaborative research was indicated.

3. The psychiatrists felt that the statistics presented for employment of psychologists were not really indicative of the trend to-

ward private practice on the part of psychologists (and other groups including social workers, and even ministers), similar to the change in the picture in psychiatry since World War II. They felt that legal certification encourages this and that adequate controls are not yet available. The psychologists in turn argued that there is no clear evidence of this trend and that present legislation is only one element of a pattern of social control which must also take account of codes of ethics, statements of desirable forms of interprofessional relations, and practices regarding membership standards and other forms of internal control. Given these basic areas of disagreement, both groups felt strongly that a factual study must be made of the effect of present legislation on the movement to private practice. The American Psychological Association has already made this a matter of policy.

4. Psychologists clearly recognized the legitimacy of the psychiatrists' concern for the medical protection of individuals. This issue arises not only with respect to specific legislative bills but also with respect to other forms of social control in both groups. The specific weighting of the effects of legislation as compared to those of standards developed and enforced within a professional group was another problem that the two groups differed on in opinion; but both agreed that there was insufficient factual evidence at the present time to assess the effects of legislation. The ultimate solution is in part, one of proper understanding and collaboration between psychiatrists and psychologists, and in part, one of recognizing the broad responsibility that any professional man undertakes, when he attempts to serve his clients or patients.

5. Members of the two committees disagreed also on the legal differences between certification legislation and licensing legislation. Certification laws define and limit the use of a title, whereas licensing laws restrict practice to a defined group. This issue is admittedly beyond the competence of the members of the two committees although it is an issue of concern to both groups.

6. The members of the two committees agreed that local discussions and consultations must be maintained at an effective level between psychiatry and psychology. Thus the two committees will suggest that the district branches of the American Psychiatric Association and the state associations of the American Psychological Association proceed to the establishment of interprofessional committees to provide a vehicle for local discussions and local consideration of the basic issues between the two professions.

7. It also seems imperative to members of both groups that some machinery be established for the interchange of ethical complaints in a more formal manner. Underlying some of the acrimony between the two groups will often be found allegations of unethical or improper behavior. These rumors become serious issues; they must be treated as such. Therefore, the two committees will undertake to work out a system of formal exchange of such complaints for study by the respective ethics structures of the two associations.

8. The committees discussed the importance of communication between the two central offices in Washington; it appears self-evident that this situation can and should be improved.

9. With regard to the chronic issues of private practice and psychotherapy, and the attribution of motivations, both groups argued about the relative weight of economic forces. The necessity for the opportunity to obtain clinical material from psychotherapy for research in the understanding of human behavior was recognized as legitimate by the psychiatrists, although, again, the question of a private-practice setting for this was debated. Certainly neither group could evaluate with precision the various motivations which operate in these areas of our interprofessional relations.

10. It was compellingly clear to the membership of the two committees that such meetings must continue; we are presenting here this narrative account of the May meeting to indicate to our parent groups that discussions have been re-opened, that some progress has been made in difficult areas, and that we propose to continue these conferences after a lapse in relationships of almost two years.

BOOK REVIEWS

Dreams in Folklore. By *Sigmund Freud* and *D. E. Oppenheim.* (New York : International Universities Press, 1958, pp. 111. $3.00.)

The manuscript of this book holds considerable historical interest. Oppenheim, a professor of Greek and Latin at the Akademisches Gynasium in Vienna, had dedicated to Freud one of his studies in classical mythology. This led to a collaboration in this present work in 1911. Shortly after Freud left the manuscript with Oppenheim for his comments, the latter dissociated himself from Freud and the Vienna Psychoanalytic Society. The manuscript, the existence of which was known, was traced to a daughter of Oppenheim living in Australia ; it had survived travels from a concentration camp to another continent, and was eventually acquired for the Sigmund Freud Archives. It is the only original Freud manuscript written prior to 1914 which is preserved. The book presents the text both in German and English, contains photographs of the first manuscript page and of a letter from Freud to Oppenheim and a preface by Dr. Bernard L. Pacella, one of those whose efforts led to the acquisition of the text.

The contents of the monograph consist of brief items from German and Slav folklore, indicative of two main themes. The first 3 references are to penis symbolism in dreams, all interestingly prophetic of the psychological trend that Freud initiated in his interpretation of dreams. The second set of 11 references from the folklore deal with the general topic of the symbolism of feces in the dreams of the type of dream which deals with bodily feelings which occur when urinary or fecal tension or genital sensations tend to disturb sleep.

The stories of these simple folk who "interpreted" the symbolism in the dreams of their kinsfolk, either directly or by allusion, gave Freud the opportunity to achieve a delightfully artistic work, the theme of which may seem common knowledge today, but which, nevertheless, will repay readers handsomely for the brief time that the reading takes.

Norman Reider, M.D.,
San Francisco.

The British Encyclopaedia of Medical Practice. Medical Progress, 1958. Editor in Chief, *Lord Cohen of Birkenhead.* (London : Butterworth & Co., 1958, pp. 352.)

Since the last war there has been sufficient time for the proper digestion of much of the new research resulting from the forced acceleration during that war. What one might call the "penicillin" principle and atomic research jarred things loose from the habit of the then orthodox thought paths. Also technological advances really jet-propelled the specialists into orbit though we hope we all can at least keep in touch.

The Critical Surveys in this latest, well-known volume bring up to date particularly well the various advances in knowledge on important subjects. One can pick out as timely the ones on virus diseases (with an extensive and excellent bibliography), congenital heart disease, neurology and radioaction hazards. In chest diseases, J. G. Scadding discusses the chemotherapy of tuberculosis after long-term experiences have led to more definite opinions on doubtful points. The diffuse pulmonary fibrosis problem has become a difficulty in diagnosis and treatment and this is considered at some length.

In the survey of neurology all the neurological complications of carcinoma in general and of bronchogenic carcinoma in particular are discussed at length. The neurological complications in disease of other organs (liver for example) make interesting and valuable reading. Progress in pathology brings into view the perspective of the new pathology with its new techniques.

With the introduction (at such a pace too) of so many drugs, Part III on Recent Developments in Pharmacology and Therapeutics is very ably done, as usual, by R. W. Brookfield.

With a medical literature so vast, these volumes of Medical Progress allow a good scanning of all the fields. This is the second year of Lord Cohen's editorship.

Trevor Owen,
University of Toronto.

The General Semantics of Wall Street. By *John Magee.* (Springfield, Mass. : John Magee, 1958, pp. 423. $12.00.)

This book is an interesting application of Korzybski's system of general semantics to the motivations and evaluations that commonly influence those who invest in the stock market. The roots of erroneous functioning to which Korzybski attributed much of human maladaptation are amply and vividly illustrated by the author in many attitudes adopted toward Wall Street. Here, as elsewhere in human conduct, he demonstrates the inaccurate, and

sometimes disastrous, results that may arise from assuming that the map is a real equivalent of the territory, or from failing to distinguish between mere verbal constructs and the actualities of experience. Many of these ploits may to some readers seem little more than truisms when they are merely stated in general terms. Mr. Magee by applying them in his numerous concrete examples and relevant illustrations shows that they cannot be lightly dismissed.

The author's presentation of general semantics is lucid and readily understandable to those unfamiliar with the more elaborate and technical exposition of Korzybski's principles embodied in *Science and Sanity*. Before turning to the specific problems of the stock market Magee demonstrates the faulty conclusions that can arise from popular but unwarranted, and chiefly unconscious, assumptions that are, so to speak, built into our neural functioning, and which emerge unhappily in the result of our efforts to evaluate and deal adequately with our environment. In addition to its value for the ordinary reader seeking a realistic orientation in the relatively circumscribed but complex set of forces that determine the success or failure of financial investments, this volume can also be recommended as an interesting and sound introduction to the discipline of general semantics.

Since so much of psychiatric theory and psychiatric thought is today still at the conceptual level it should be particularly helpful and appropriate for psychiatrists to consider carefully the numerous and impressive illustrations in which the author shows how readily even learned and highly intelligent people can lose awareness that they are dealing with abstractions, and, lacking this pertinent insight, work their way logically to conclusions of excessive implausibility.

HERVEY W. CLECKLEY, M.D.,
Augusta, Ga.

PROGRESS IN CLINICAL PSYCHOLOGY. VOL. 3. Edited by *D. Brower* and *L. Abt*. (New York : Grune and Stratton, 1958, pp. 249. $7.75.)

The first 2 volumes of this series appeared in 1952 and 1956. The present volume contains 18 chapters arranged in 4 parts and written by 20 authors.

The introductory section reveals that clinical psychology is concerned with its professional status : "The clinical psychologist is viewed as a professional person with scientific training who brings the best available knowledge and the most skilled technique to bear in an attempt to understand and to help individuals and groups of individuals in the conduct of their personal and interpersonal transactions." Yet, clinical psychology has not come of age scientifically or professionally. It tends to separate itself from experimentation, research and theory construction. Like much of psychology in general, it "is short on scientific and theoretical material." Clinical psychology, says one of the contributors, now faces a critical struggle with organized medicine, organized psychiatry, and organized psychoanalysis. This struggle began when clinical psychologists entered independent practice. Here we interrupt our paraphrasing mood to comment on a gross inaccuracy in the text. It is true that a moratorium on legislation for psychology was jointly recommended by parallel committees of the American Psychiatric and American Psychological Associations. Although this moratorium was accepted by the Council of the American Psychiatric Association, it was never accepted by the American Psychological Association. The APA cannot be accused therefore of independently denying the moratorium, as is done in this book. The Council of the American Psychiatric Association, rather, rescinded its approval of legal certification of psychologists because of mounting evidence that many psychologists were really interested in, and pushing for, licensure to establish themselves to practice on sick persons independently of medicine, and because the meaning of legal certification was being misinterpreted by the public as licensure and as broad competence to care for the sick.

Part two, the Psychodiagnostic Test Battery, reveals a wide variety of attitudes and practices. However, many of the authors lean heavily upon psychoanalytic formulations. Most are inclined to regard testing as one way of placing individuals in situations from which they attempt to extract information about psychodynamics, psychopathology, personality, and diagnosis and to make recommendations regarding psychotherapy. The psychological examination tends to be considered as an interpersonal transaction between client (patient) and psychologist. The tests are catalytic agents to facilitate the examiners' observations and inferences. Most of the authors take the position that the individual tests, especially projective tests, have low validity and low reliability. Thus a battery of tests is employed, and the assumption here is that somehow out of the battery a more meaningful description of personality may be obtained. Most frequently mentioned tests are the Rorschach,

the T.A.T., the M.M.P.I., one of the Wechsler scales, Sentence Completion, and the House-Tree-Person drawings. Some of the authors believe that they must also interview the patient, sometimes at considerable length, to give the tests much meaning. The tests, in short are not objective. The results depend more on the experience of the examiner. In different settings the use of the tests may vary. For example, in an institution, the psychologist after giving many tests "chews over his results *ad nauseam*" before writing a report. When the psychologist works as a consultant to a private psychiatrist, the test battery frequently undergoes a suspicious shrinkage. And, the psychologist in private independent practice finds himself "slipping the client a quick Bender and sending him home with a group M.M.P.I. to be filled out between sessions." A further difficulty is that an adequate useful personality theory to which the tests many be related does not exist. These chapters suggest that projective tests reveal the theoretical biases, the clinical experiences and the personality of the tester as much as they reveal the personality of the person tested. In projective techniques the examiner projects himself into the results.

The third section of the book, Changing Conceptions in Psychotherapy, discusses client centered counselling and psychotherapy. Freudian psychoanalytic progress, research and diagnosis in therapy, mysticism and psychoanalysis, group psychotherapy, play therapy, rehabilitation therapies, pharmacologic aids to psychotherapy, and newer approaches. The last section reviews clinical psychology in other lands, covering western and eastern Europe and the United Kingdom. There, generally speaking, much of what is called clinical psychology is closely tied to, or is in the hands of, psychiatry, and psychiatrists publish on mental testing and do much of the projective testing.

This book hangs together better than most which have so many contributors. It is informative, well written, and at points amusingly self-critical of clinical psychology. Worth reading for those who wish to keep abreast of current attitudes and practices in this field.

P. E. Huston, M.D.,
Department of Psychiatry,
State University of Iowa,
Iowa City, Iowa.

An Anthropologist at Work. By *Margaret Mead.* (Boston: Houghton Miflin Company, 1959, pp. 583. $6.00.)

This biography by Margaret Mead brings together the principal writings of her teacher and friend Ruth Fulton Benedict. The volume contains Benedict's important journal articles, literary fragments, published and unpublished poetry, and some of her correspondence, particularly that with Franz Boas and Edward Sapir. Through her narrative and the presentation of Benedict's work, Mead treats the reader not only to the hidden side of a social scientist's career but also to the ideas and individuals which shaped the course of American anthropology.

Although Boas remains the dominant historical figure, it fell to Benedict as his intellectual successor in the Columbia University to pull together the elements of a growing "science of man." In this role, Benedict brought to anthropology her own unique background. An overly sensitive and shy woman, her academic interests began in literature with a concern for life's meaning. Her early writings reveal an intense introspection. Later she found in anthropology a vehicle whereby she could project this same search into the study of man. Although poetry remained of interest to her, it was in her prose that she so ably and beautifully presented her extremely humanistic point of view. *Patterns of Culture* remains her most imaginative and popular work.

As a transitional figure in American anthropology, Benedict carried forward the Boas tradition but added her own dimensions. While she continued to be concerned with culture she turned to the individual as well and inveighed against those determinists who neglected one or the other. This concern for the interrelationship of the individual to his culture culminated in her own "configurational" approach and also greatly influenced Mead and Sapir, who were at this same time developing their interests in the field of culture and personality.

This is a good book. Anyone interested in the social sciences, their development, and point of view will find this a valuable contribution. We are indebted to Mead for compiling and presenting the writings of this gifted woman in so lucid a style.

Robert C. Dailey, Ph.D.,
Toronto, Ont.

The Birth of Normal Babies. By *Lyon P. Strean.* (New York: Twayne Publishers, 1958, pp. 194. $3.95.)

Dr. Strean has for many years been interested in the effects of all sorts of experiences undergone by the mother during pregnancy upon the development of the intrauterine or-

ganism. In the present book, which is apparently written for a popular audience, the author recounts his own observations on a large variety of *ad hoc* cases—cases that have, for the most part, come fortuitously to his attention. It would be easy to dismiss Dr. Strean's cases with the easy statement that they hardly constitute adequate scientific evidence. Almost all his evidence is based on single cases. But Dr. Strean is well aware of the difficulty of a planned controlled study with human beings, and I quite agree with him that in the absence of such studies the evidence presented by the *ad hoc* case should not be hastily dismissed. Dr. Strean has, indeed, gone further, and with Dr. Lyndon A. Peer has made a retrospective study on human mothers which strongly suggests that emotional disturbances during the first trimester of pregnancy are capable of producing developmental anomalies in the developing fetus usually of the cleft-palate hare-lip variety. Experimental studies by Strean and Peer on mice yielded results which strongly tended to support their inferences in relation to emotional stress in the human mother during the first trimester of pregnancy.

Dr. Strean's present effort will not serve to convince any scientifically trained mind of the validity of the case that he attempts to make out—but this should not prevent the qualified reader from paying serious attention to the implications of his evidence, namely, that there is a significant relationship between uterine environmental experience at definite critical developmental periods in the life of embryo and fetus—and development, not only physical but mental. Meanwhile Dr. Stearn's cautionary remarks to young people embarking upon the creation of a family will serve a useful purpose.

ASHLEY MONTAGU, PH.D.,
Princeton, N. J.

AUSTRALIA'S ABORIGINES: THEIR LIFE AND CULTURE. By *Frederick D. McCarthy.* (Melbourne, Australia: Colorgravure Publications, 1957, pp. 200. $13.00.)

This beautifully produced volume contains over 90 plates in color and numerous plates in black and white, together with a full text by a well-known authority on the Australian aborigines, Frederick D. McCarthy. There are 9 chapters dealing with various aspects of the life and culture of the Australian aborigines in a very readable and reliable manner. Undoubtedly this volume represents one of the most pleasant ways, and instructive, to get vicariously acquainted with an extremely interesting people whose contribution to the understanding of the nature of human nature has been very considerable indeed.

ASHLEY MONTAGU, PH.D.,
Princeton, N. J.

BIOLOGICAL PSYCHIATRY, VOL. I. Edited by *Jules H. Masserman.* (New York: Grune & Stratton, 1959, pp. 338. $9.75.)

This first volume contains the papers presented to The Society of Biological Psychiatry, May 1958. Dr. Masserman's Presidential Address again stresses the basic role of motivation, adaptation, displacement and conflict. Study, diagnosis and treatment must be in terms of the uniqueness of the individual and the limits of the situation. Among other papers, evoked yawning in monkeys is reported. The sexual behavior of cats appears to be largely a matter of experience rather than instinct. A contribution of Dr. James Papez (probably his last) is a posthumous fragment with a suggestion that the caudate and putamen are dominant in toxic extrapyramidal efferent action by mobilizing cholinesterase.

Twenty-two of the 26 papers were neurochemical, as: studies of reserpine, ceruloplasmin and triflupromazine with schizophrenia; iproniazid in melancholia; a research for alternatives to iproniazid; a comparative study of phenothiazine tranquilizers; L.S.D. and mescoline studies. The uses of drugs in treating depression, and in research and treatment generally, are reviewed. A conditioned reflex technique is suggested for use in psychiatric diagnosis and for measuring the effect of drugs.

Glutamic acid and glutamine appear to be involved in the chemical maturation of the brain. Increases of epinephrine and norepinephrine follow E.C.T. Water intake and output varies with the mood level. Other reports include diethazine effects during E.C.T; studies of dimethylaminoethanol on evoked cortical activity and in clinical trial with normal and schizophrenic patients; the effects of crystalized adrenochrome; the influence of personality on the action of phenyltoloxamine and reserpine. Chapman and Wolff find a protease in the c.s.f. in subjects with sustained vascular head pain. This finding appears also in young adult patients with chronic schizophrenia.

The annual record of the transactions of this distinguished American group should be of regular interest to those who wish to keep themselves informed of the application of biological sciences to psychiatric problems.

ALLAN WALTERS, M.D.
Toronto, Ont.

CRIME AND INSANITY. Edited by *R. W. Nice*. (New York : Philosophical Library, Inc., 1958, pp. 280. $6.00.)

This compilation of 12 unrelated essays contains two of outstanding merit, both by lawyers : Simon E. Sobeloff, formerly Solicitor General of the U. S. and now Circuit Judge of the U. S. Court of Appeals in Baltimore, presents a lucid and authoritative exposition and critique of Anglo-Saxon concepts of criminal responsibility "From McNaghten to Durham and Beyond." This includes a trenchant criticism of the proposals by the American Law Institute. (The volume also includes a chapter by Herbert Wechsler, the principal proponent of the American Law Institute Code. Coherence and continuity would have been better effected had this chapter by Wechsler (XII) immediately preceded the one by Sobeloff (VIII).)

Another chapter of merit is that by Weihofen. Incidentally the views of both Sobeloff and Weihofen have been widely publicized to psychiatrists and there is virtually nothing new in these essays.

Davidson presents his views on irresistible impulse with journalistic effectiveness ; they are unexceptionable. An original and provoking sociological consideration of criminality is presented by Cressey of the University of California.

The section authored by William F. Burke, Jr. identified as "Founder of The National Psychiatric Reform Institute in Albany, N. Y." contains some statements which are little short of astonishing. For example :

"Operations without permission should be outlawed, and patients suffering from syphilis should not be forced to submit to spinal taps, because such spinal taps often injure the patient, causing him to become a paresis case years before he would have if the disease were allowed to take its normal course."

"Honest doctors admit that while there have been a few permanent successes with shock therapy—there have also been untold numbers of tragic failures. The human brain is the center of the nervous system, the seat of consciousness and volition. It is for this reason that the mentally-ill person, himself, if he is at all rational, should be permitted to sign for or refuse to submit to shock treatment. Doctors tell us that shock therapy is invariably more beneficial when administered to a cooperative patient."

"Often mental diagnosis is extremely difficult, with the best qualified examiners in lunacy and certified psychiatrists disagreeing among themselves. Such disagreement is the rule rather than the exception. So the mental patient, too, has a perfect right to disagree with a doctor, and since it's his own God-given brain, his—the patient's—will should prevail with regard to dangerous or experimental treatment."

"As I stated in 'Life Today' of June-July 1952. A new power is making itself felt in the world—the conscience of man, shocked by mistreatment of the mentally afflicted."

This reviewer submits the following quotation from this same chapter with the confession that he is unable to make head or tail of it : "It is the claim of psychiatric reform that basic scientific and legal research, motivated by conscience, result in findings which support greater application of the legal concept to judicial aspects of practice in both civil and criminal cases." The latter part of this chapter proclaims the author's credo for psychiatric reform, opposes the establishment of a "psychocracy," harkens back to Roger Williams and concludes that the author has given his life "to this glorious cause" and is "happy to not (e, omitted—one of many misprints) that it is resulting in momentous and colossal changes everywhere."

The inclusion of such a chapter raises some wonder about the editor's competence and authoritativeness. Unfortunately his qualifications and background are not spelled out. His introduction does appear to reflect considerable familiarity with the problem.

All in all this volume, despite its shortcomings and misprints, contains enough of merit to warrant its purchase by psychiatrists with a special interest in criminal behavior.

HARRY L. KOZOL, M.D.,
Boston, Mass.

IN MEMORIAM

OSKAR VOGT, M.D., 1870-1959

With the death of Professor Dr. Oskar Vogt on July 31, 1959, in his ninetieth year, another one of the eminent international figures in neurology and psychiatry of the first half of this century has passed.

Dr. Vogt was the former director of the Kaiser Wilhelm Institute for Brain Research in Berlin-Buch, now in the Russian zone. The scope of this institution was shown by its departmental organization. There was a department of anatomy, headed by Cécile Vogt; histology, directed by Max Bielschowsky; human physiology; experimental and electrophysiology; human genetics; animal genetics; chemistry and pharmacology; psychology; engineering and electronics; photography.

Oskar Vogt was born in Husum, Schleswig, the son of a Lutheran minister. His teachers in psychiatry were Otto Binswanger (Jena, 1893) and August Forel: (Zürich-Burghölzli, 1894). Asked by Forel: "What do you want to study?" Vogt replied: "Hypnotism and brain anatomy." Myelinogenesis of the brain, which interested Vogt intensely, was in those days an important issue, and from Zürich he proceeded to Flechsig at Leipzig, who was the authority on this subject. The years of 1896-98 saw him in Paris, doing ward rounds and laboratory work at the Salpêtrière with Déjerine. Here he met Cécile Mugnier, who worked as an externe in the clinic of Pierre Marie at the Bicêtre. They were married in 1899. And with this begins the odyssey of this unique pair of savants.

At the beginning of the century, "the Vogts," as they soon became known in scientific circles, established a neurobiologic laboratory in Berlin, which after a few years was incorporated into the University of Berlin. Here was carried on the study of the structure of the brain, which at that time was in the hands of psychiatrists and neurologists. In 1902 the *Journal für Psychologie und Neurologie* was started under their editorship. For many years the financial support of the neurobiologic laboratory came mainly from a strenuous private practice of neurology and the neuroses.

So great was the success of the Vogts that in 1931 the imposing Kaiser Wilhelm Institut für Hirnforschung was built for them in Buch, a suburb of Berlin. The institute was financed by contributions from the German Reich, the State of Prussia, the City of Berlin, the arms manufacturing Krupp family, and the Rockefeller Foundation.

Early in their career, the Vogts were occupied with the investigation of the myelinated fiber systems. This soon led to more intricate studies, culminating in what is known today as myeloarchitecture of the brain. They also analysed the relationship of the myelinated nerve fibers (myeloarchitecture), to the arrangement, number, size, and form of nerve cells within the laminae of the cortex (cytoarchitecture), with a view of subdividing the brain into regions of specific structure, *i.e.*, into fields (architectonics). Much of the work on cytoarchitectonics was assigned to their coworker Korbinian Brodmann (1868-1918), who during the period of 1901-10 was largely instrumental in establishing the science of cytoarchitectonics of the mammalian cortex. Some of this work has been criticized in recent years as not completely accurate. One should, however, not forget that such pioneering work can not be complete in the finest details, otherwise it would never see the light of publication.

Morphologic studies were only a part of the Vogts' research. Starting in 1903, physiologic mapping of the cerebral cortex in monkeys became routine with them. They mapped altogether about 25 functionally different fields, each of which was shown to have its characteristic cytoarchitectural structure. The importance of this work can only be appreciated, when one realizes that the functions of only six or seven regions of the cortex were known at

CECILE VOGT AND OSKAR VOGT

From: Grosse Nervenarzte, Band II,
herausgegeben von Kurt Kolle,
Georg Thieme Verlag, Stuttgart, 1959.

that time. These studies, in turn, laid the foundation for O. Foerster's (1919) mapping of the human cortex by means of electrical stimulation. The maps of O. Foerster and of Oskar Vogt differed only in small detail, and in these, Foerster conceded later that Vogt was correct. The field numbers employed by Foerster were those previously used by the Vogts.

Their names, especially Cécile's, have been permanently linked with diseases of the basal ganglia, to refer only to the work on *status marmoratus* (a marbled or mottled appearance) of the striatum in some cases of athetosis. Up to that time athetoid and choreiform movements were considered a hysteroid manifestation. The characteristics of the glial pattern (glia-architectonics) and the vascular pattern (angioarchitectonics) of the basal ganglia were first mentioned by them.

The Vogts' many observations appeared in monograph form or as regular publications, written either in the German or French language.

Oskar Vogt was also an expert in genetics, the new science which revolutionized since 1900 the entire field of biology. It was possibly due to Forel's interest in studying ants to determine race differences from the standpoint of behavior, that Oskar Vogt became an avid collector of bumblebees and beetles. In the quest of these insects the Vogts traveled to the Caucasus mountains, North Africa, Balearic Islands in the Mediterranean, and to the Balkans. The collection finally numbered approximately 400,000. One rare specimen cost them the equivalent of 100 U. S. Dollars. Many new species were discovered by the Vogts.

The interest in bumblebees and beetles had an entirely different objective from that of Forel's study of the life of ants. Vogt was interested in the laws underlying genetic mutations, and thus concentrated on the variations of the color bands in bumblebees and in the size, shape, and position of color spots on the wings of beetles. He contended that just as the body hair and color spots of these insects are subject to variation, so is the brain of man subject to structural variation, even so far as individual laminae of a cortical area are concerned.

The combination of genetics, cerebral field mapping, and pharmacochemical experimentation, some of the latter done by their daughter Marthe, furnished the bulwark to the Vogts' theory of "pathoclisis," later applied to diseases of man. In this connection, they created the concept of "topistic units," which, in a sense, were physiochemical units, corresponding broadly to anatomical fields. Individual characteristics within topistic units were held responsible for their varying predisposition to succumb to a great variety of noxious agents and to genetic defects. For this differential topistic reactivity, Oskar Vogt coined in 1922 the term "pathoclisis." He designated, for instance, the striatum and the globus pallidus as two separate topistic units. Thus, the tendency of the globus pallidus to bear the brunt of the attack in carbon monoxide poisoning, or the selective damage of the substantia nigra in von Economo's encephalitis, was to them more readily explicable on this basis than on peculiarities of vascularization, as advocated by others.

Not being in sympathy with the doctrines of the Nazi party, Oskar Vogt resigned from the directorship of the Berlin institute. With private means and assisted by the wealthy Krupp family, the Vogts built their own brain research institute deep in the scenic Black Forest, on a sunny hillside above the town of Neustadt, in Southern Germany. Here they could and did work undisturbed. Cécile, liking sunshine and warmth, would have preferred to build the institute in Southern France, but existing foreign exchange restrictions prohibited this desire.

The brains for their studies came now from the not too distant University of Freiburg, where Ludwig Aschoff was professor of pathology, and from other universities. The Institute at Neustadt houses serial sections of over 500 brains. In this collection are also to be found the "élite" brains of many distinguished persons, including those of the pathologist Aschoff, the neuroanatomist A. Forel, the poet Sudermann, the linguistic genius Krebs, the psychiatrist Sommer, the Swedish neurolo-

gist S. E. Henschen, and others. They used this material for the study of the structural peculiarities in the brains of those who are specially gifted. The approach was both gross and cytoarchitectural. In a person, who spoke some 60 languages fluently (Krebs, who was attached to the embassy in Berlin), the temporal lobe was greatly overdeveloped. In a man of remarkable intellect, but who was so lacking in visual appreciation that he could hardly find his way home, a 50% reduction in the area striata was found. In a talented violinist (Ysaye of Belgium) there was a high degree of development of the transverse gyri of Heschl in the temporal lobe and of parts of the ventral lip of the Sylvian fissure. When one part of the brain was particularly well developed, other parts were in the realm of normal. Hence, universal genius was considered impossible. Studies of this sort, only in their incipiency, could have great practical sociologic importance in the future. The many different cortical fields, delineated by the Vogts, were assumed to have an equivalent number of functions, and the interworking of these in myriad combinations—with each field subject to individual variation—was believed by them to account for the many variations in human behavior.

Oskar Vogt himself was endowed with an extraordinary memory, which remained with him until his death. This is a prerequisite for the research man, who is engaged in the study of the cytoarchitecture of the brain. It is essential to be able to retain the countless characteristic details of the cellular layers of the many cortical fields. Individual variability of cerebral architecture has barely been investigated in relation to mental abnormality. A more than average memory becomes particularly important, when one is dealing with possible subtle changes as observed, for example, in schizophrenia, the pathology of which was reinvestigated by the Vogts and their co-workers in the past two decades. They presented their work, full of minute details, and carried out with an endless patience and the greatest sincerity, at the International Congress of Neuropathology in 1952, where they introduced new points into the discussion. They insisted that it is the persistence of diseased cells rather than the loss of nerve cells which causes the schizophrenic or any other mental symptomatology; and furthermore that certain regions of the brain are more involved than others. Extensive control material was used. Positive findings as these, coming from such a source, cannot be brushed aside lightly.

In more recent years, the aging of the brain was investigated, particularly the significance of the Nissl substance, and the life history of the nucleolus. It was Oskar Vogt's belief that mental activity retarded the aging of the nerve cells. He himself was the living example for this theory.

The Vogt Institute at Neustadt became the mecca for scientists from every corner of the world, some coming for brief research consultations only, and others staying longer for special studies. Those of us, who had the privilege of being guests of Cécile and Oskar Vogt will always cherish the stimulating hours, when after the evening meal, one withdrew into the huge drawing room, where conversation on almost any subject went on, often in several different languages.

Recognition and honors came from many lands. Oskar Vogt held 9 honorary doctorates, among them the Honorary D. Sc. by Oxford University. He was the recipient of the Erb (1926) and the Kraepelin gold medal (1928). When Lenin suffered a stroke, he was called as a consultant. On his death (1924), the Russian Government commissioned him to examine Lenin's brain, and to organize a Brain Research Institute in Moscow, which was staffed by some of his former Russian pupils. Several years ago he received the State Price of the Soviet-zone, and only recently was awarded the highest German Civilian Order in the field of science.

He is survived by his wife Cécile Vogt and two daughters, Marthe, an internationally known pharmacologist, and Marguerite, a geneticist, of Pasadena, California.

Walter L. Bruetsch, M.D.,
Indianapolis, Ind.

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2. Perform regular liver function tests.
3. In all instances daily dose should not exceed 12 mg.
4. Reduce daily dose as soon as response is established, usually in a matter of 1 to 2 weeks.
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1. *Ferrand, P. T.: Minnesota Med.* 41:853 (Dec.) 1958.

2. *Edisen, C. B., and Samuels, A. S.: A.M.A. Arch. Neurol. & Psychiat.* 80:481 (Oct.) 1958.

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—Settel, E.: Internat. Rec. Med. 170:505.

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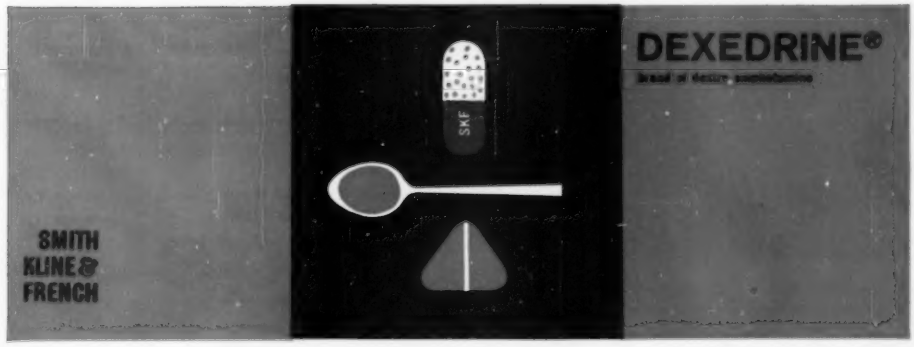

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Havens, L. L.: Dis. Nerv. System *19*:1 (Jan.) 1958.

"...recommend its use."
Impastato, D. J., and Gabriel, A. R.: Am. J. Psychiat. *114*:698 (Feb.) 1958.

"...treatment of choice."
Michael, K. D., and Wunderman, D. C.: J. Nerv. & Ment. Dis. *126*:535 (June) 1958.

"...irrespective of age."
Robie, T. R.: J. M. Soc. New Jersey *52*:82 (Feb.) 1955.

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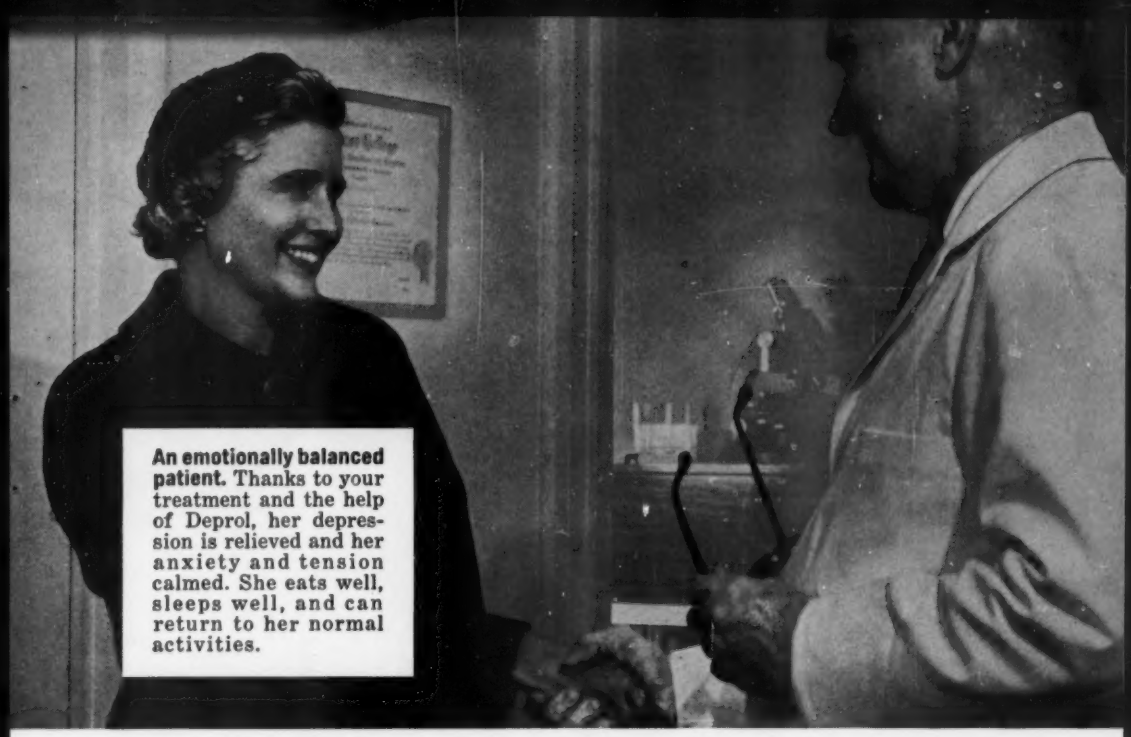

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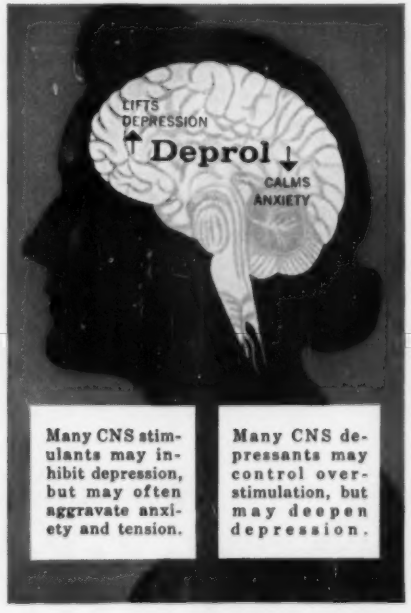
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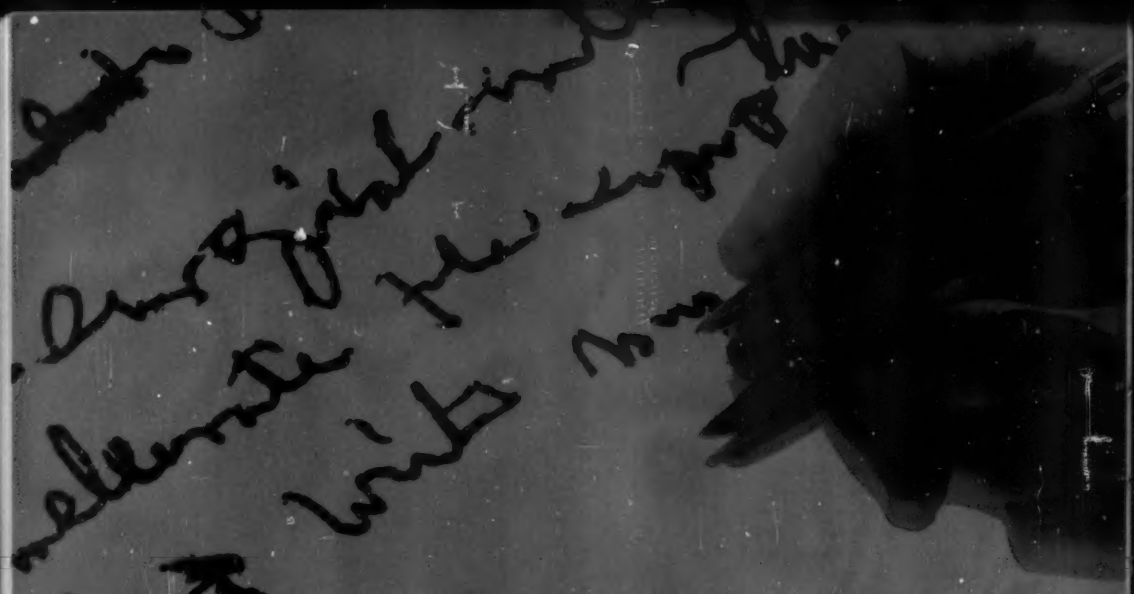

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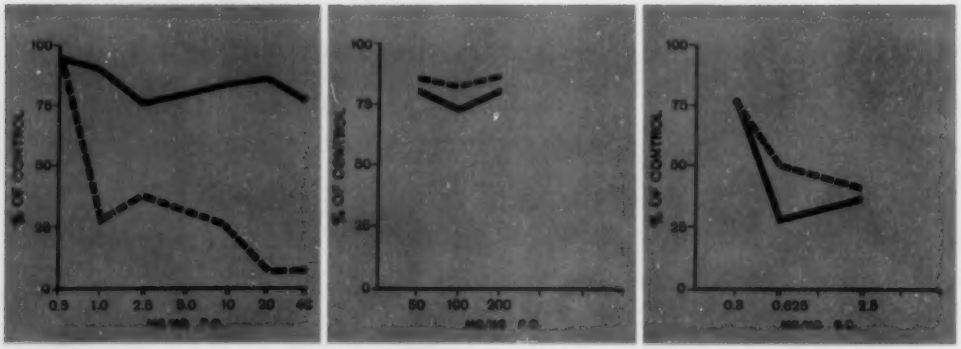

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10 mg

Dosage and Administration: Because of the wide range of clinical indications for Librium, the optimum dose varies with the diagnosis and response of the individual patient. The dosage, therefore, should be individualized to achieve maximum benefits.

	Usual Daily Dose
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Severe anxiety and tension, chronic alcoholism, agitated depression, and ambulatory psychoneuroses (*e.g.,* acute and chronic anxiety states, phobias, obsessive/compulsive syndrome and schizoid behavior disorders)	20 mg, 3 or 4 times daily
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Published Reports on Librium: 1. G. A. Constant, *Dis. Nerv. System, 21*:(Suppl.), 37, 1960. 2. D. C. English, *Current Therap. Res.,* in press. 3. T. H. Harris, *Dis. Nerv. System, 21*:(Suppl.), 3, 1960. 4. L. O. Randall, *ibid.,* p. 7. 5. J. M. Tobin, I. F. Bird and D. E. Boyle, *ibid.,* p. 11. 6. H. A. Bowes, *ibid.,* p. 20. 7. J. Kinross-Wright, I. M. Cohen and J. A. Knight, *ibid.,* p. 23. 8. H. H. Farb, *ibid.,* p. 27. 9. C. Breitner, *ibid.,* p. 31. 10. I. M. Cohen, Discussant, *ibid.,* p. 35. 11. L. J. Thomas, *ibid.,* p. 40. 12. R. C. V. Robinson, *ibid.,* p. 43. 13. S. C. Kaim and I. N. Rosenstein, *ibid.,* p. 46. 14. H. E. Ticktin and J. D. Schultz, *ibid.,* p. 49. 15. J. N. Sussex, *ibid.,* p. 53. 16. I. N. Rosenstein, *ibid.,* p. 57. 17. T. H. Harris, *J.A.M.A., 172,* in press.

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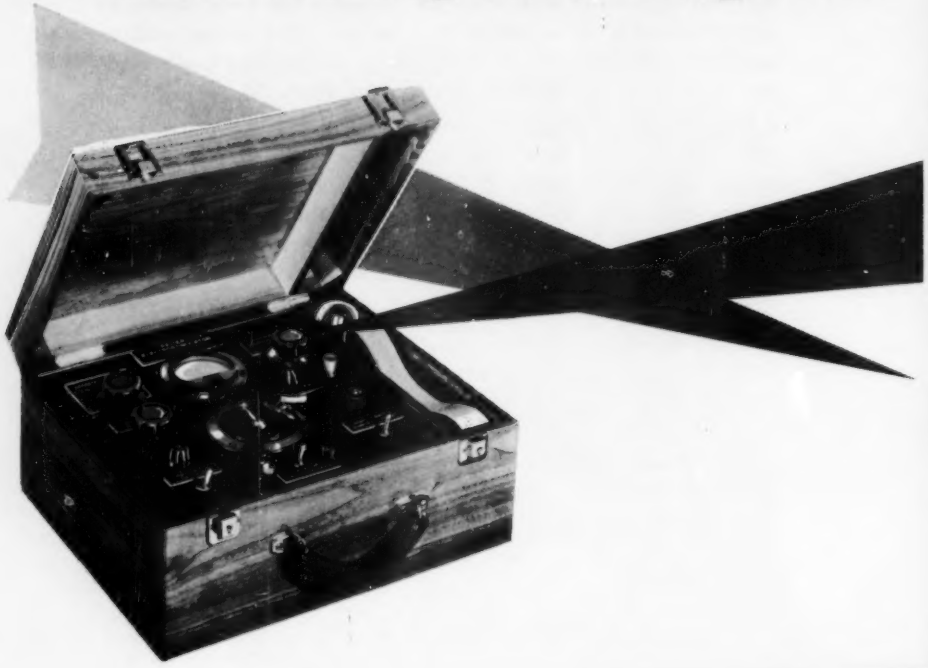

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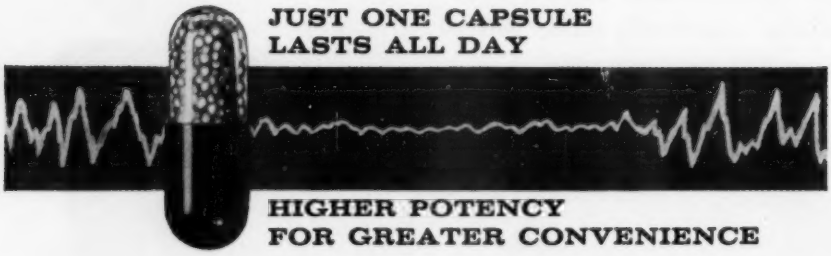

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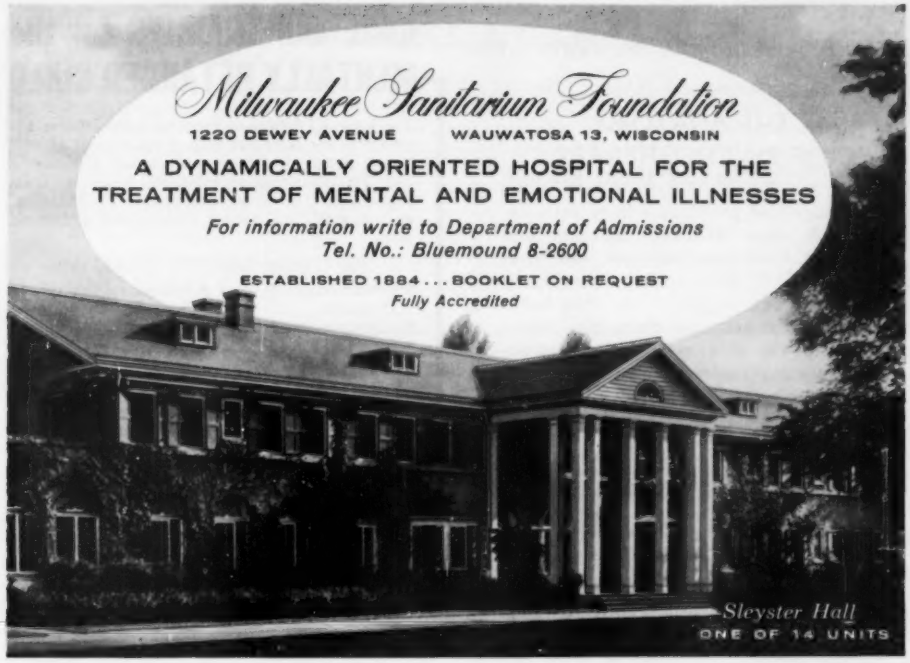
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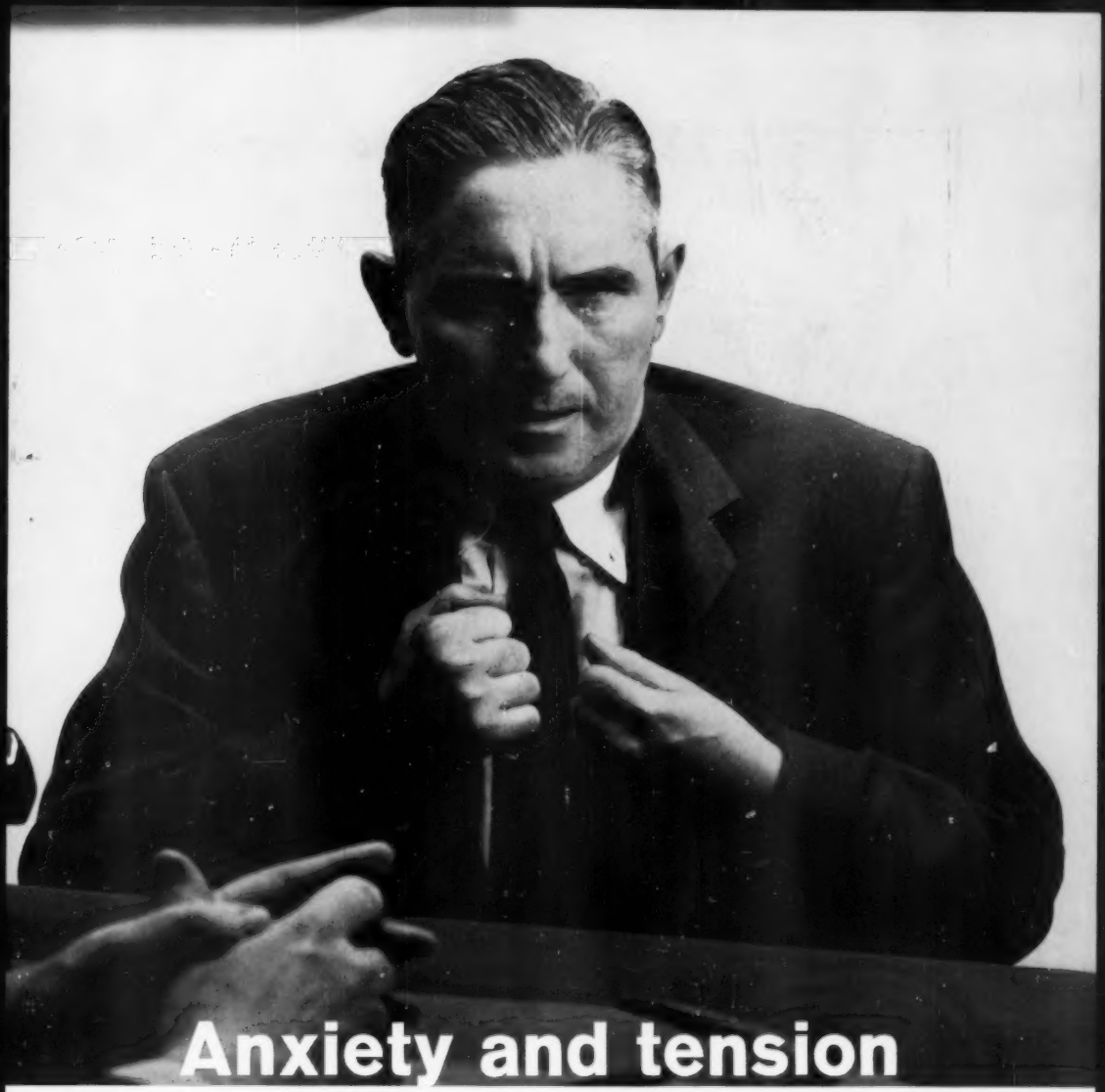

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